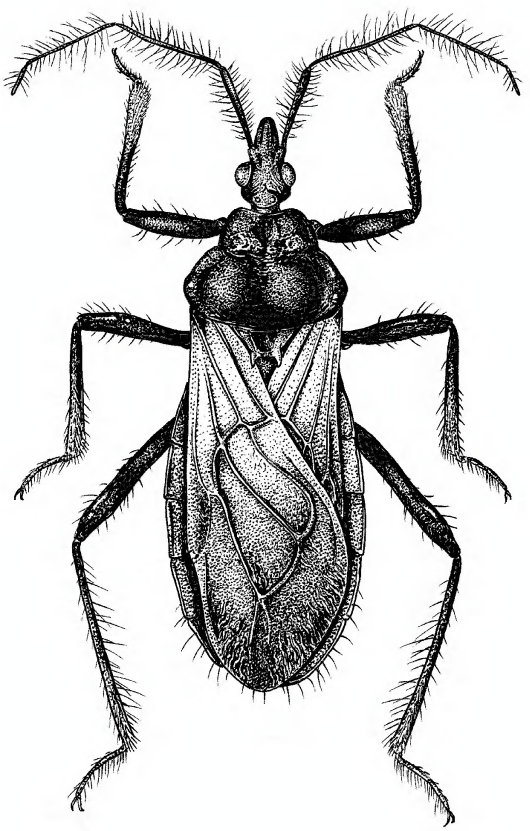
Taxonomic Monograph of the Endemic Millipede Assassin Bug Fauna of Madagascar (Hemiptera: Reduviidae: Ectrichodiinae)

Michael Forthman, Dominik Chłond, and Christiane Weirauch



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TAXONOMIC MONOGRAPH OF THE ENDEMIC MILLIPEDE ASSASSIN BUG FAUNA OF MADAGASCAR (HEMIPTERA: REDUVIIDAE: ECTRICHODIINAE)

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ABSTRACT

Madagascar is one of the world's most recognized biodiversity hotspots and has a diverse assassin bug (Reduviidae) fauna that is still incompletely known, especially for the Ectrichodiinae, or millipede assassin bugs. Ectrichodiinae are a speciose (673 described species, 118 genera), worldwide group of assassin bugs that is most diverse in the Old and New World tropics, but so far only six genera and 10 species have been described from Madagascar. Based on examination of 1981 ectrichodiine specimens mostly from the California Academy of Sciences, as well as a few other collections, dramatic undescribed species-level diversity is revealed. The island's Ectrichodiinae fauna is taxonomically revised with the description of three new genera (*Marojejycoris, Tanindrazanus*, and *Toliarus*) and 63 new species: *Gibbosella andasibe*, *Gibbosella betampona*, *Gibbosella brunalvus*, *Gibbosella conisimilis*, *Gibbosella fulva*, *Gibbosella mantella*, *Gibbosella megafrons*, *Gibbosella nitida*, *Gibbosella notoconica*, *Gibbosella pallidacorium*, *Gibbosella pallidalata*, *Gibbosella planiscutum*, *Gibbosella quadocris*, *Gibbosella vangocris*, *Glymmatophora (Glymmatophora) carolae*, *Marojejycoris auranticorium*, *Marojejycoris brevifrons*, *Marojejycoris francais*, *Marojejycoris notadichroa*, *Marojejycoris ranomafana*, *Tanindrazanus amboasaricus*, *Tanindrazanus andohahela*, *Tanindrazanus anjozorobeus*, *Tanindrazanus antananarivo*, *Tanindrazanus bemaraha*, *Tanindrazanus brunneus*, *Tanindrazanus hannajagodae*, *Tanindrazanus harinhali*, *Tanindrazanus irwini*, *Tanindrazanus joffrevillus*, *Tanindrazanus kathrynae*, *Tanindrazanus mahafaly*, *Tanindrazanus marginatus*, *Tanindrazanus marojejy*, *Tanindrazanus nigripes*, *Tanindrazanus notatus*, *Tanindrazanus simulans*, *Tanindrazanus tenebricus*, *Tanindrazanus varicolor*, *Tanindrazanus vohiparara*, *Toliarus karinae*, *Toliarus trichrous*, *Toxopus ambohitantely*, *Toxopus ampitavananima*, *Toxopus antsiranana*, *Toxopus basalis*, *Toxopus brucei*, *Toxopus farafangana*, *Toxopus fisheri*, *Toxopus griswoldi*, *Toxopus insignis*, *Toxopus italaviana*, *Toxopus melobrunneus*, *Toxopus miandritsara*, *Toxopus namoroka*, *Toxopus pallidus*, *Toxopus parkeri*, *Toxopus simulans*, *Toxopus steineri*, *Toxopus tibialis*, *Toxopus toamasina*, *Toxopus toliara*, and *Toxopus vazimba*. *Toxopus* Bergroth, 1905, is redescribed, with the first description of males in the genus, and *Cleptria signoretii* Reuter, 1887, is transferred to *Toxopus*. *Gibbosella* Chłond, 2010, is also redescribed and includes description of males for the first time. *Gibbosella elongata* Chłond, 2010, *Glymmatophora crassipes* Horváth, 1914, and *Maraenaspis bidens* (Reuter), 1887, are redescribed, with the first description of males for each species. Habitus images, documentation of male and female genitalic features, identification keys, and distribution maps are provided. Males and females are associated based on morphology, geographic information, and, when available, molecular data. The newly discovered species diversity constitutes a sixfold increase over the previously documented millipede assassin bug fauna in Madagascar.

INTRODUCTION

Madagascar, often referred to as "the island continent" due to its wide range of ecosystems and size (Scales, 2014), is one of the most biologically diverse places in the world. More than 13,000 species of plants, 900 of vertebrates, and 5800 of invertebrates are known to occur on the island (Goodman and Benstead, 2005; Phillipson et al., 2006), although, for invertebrates at least, these numbers are probably gross underestimates of true diversity. Among noninvasive species, about 50% of birds, 95% of reptiles, 100% of amphibians and mammals, 86% of invertebrates, and more than 90% of vascular plants are endemic to the approximately 600,000 km^2 island (Goodman and Benstead, 2005; Yoder and Nowak, 2006; Phillipson et al., 2006; Buerki et al., 2013). Such diversity and endemicity is extraordinary when compared to islands of relatively similar size, e.g., Sumatra (~473,500 km^2: 201 mammals, 4% endemic; 580 birds, 3% endemic) (Whitten et al., 2000) or Borneo (~748,000 km^2: 1500 vertebrates, 30% endemic) (Quek, 2009). The remarkable Madagascan biodiversity is under threat from a vari-

ety of anthropogenic influences, such as introduction of invasive species (Myers et al., 2000) and poaching of endangered species (Rakotomanana et al., 2013), although the greatest threat comes from habitat loss and fragmentation (Myers et al., 2000). Given the immense threat to its largely endemic biota, Madagascar has been deemed the world's "hottest" biodiversity hotspot and its flora and fauna is of critical conservation priority (Myers et al., 2000; Ganzhorn et al., 2001; Scales, 2014).

Nevertheless, knowledge of the island's patterns of species richness, turnover, and endemism is still incomplete (Schatz, 2002; Smith et al., 2005). This gap impedes the ability to identify and prioritize critical areas of endemism for conservation efforts (Schatz, 2002; Smith et al., 2005). Thus, taxonomic surveys of the Madagascan biota are severely needed. The California Academy of Sciences' (CAS) Terrestrial Arthropod Inventory of Madagascar Project (2000–2009) was conducted to address the need for taxonomic exploration of the arthropod fauna. This project has yielded a plethora of arthropod specimens for many taxonomic studies (e.g., Mugrabi and Azevedo, 2010; Krishnankutty and Dietrich, 2011; Álvarez-Padilla et al., 2012), and has yielded more than 3000 specimens of Reduviidae, or assassin bugs.

The morphologically and ecologically diverse Reduviidae is the second largest family of true bugs (Hemiptera: Heteroptera) that comprises 7000 described species worldwide (Putshkov and Putshkov, 1986–1989; Maldonado, 1990; Weirauch et al., 2014). Prior to the turn of the 21st century, 253 species were known to occur on Madagascar (Maldonado, 1990), ~85% of which were described by André Villiers in 30 papers published between 1948–1979 (e.g., Villiers, 1948; Villiers, 1968a; Villiers, 1979; see Maldonado, 1990, for other references). A number of small taxonomic studies (i.e., no monographs) have since focused on Madagascan assassin bugs and the described diversity has increased by 24 species (Labina and Kerzhner, 2001; Weirauch, 2008a; Chłond, 2010a, 2010b, 2010c, 2011a, 2011b, 2014; Chłond and Junkiert, 2010, 2011; Hwang and Weirauch, 2010; Zhang and Weirauch, 2011; Chłond and Guilbert, 2012; Chłond and Baňař, 2013). Of these 277 species, only 10 currently classified in six genera belong to the fifth largest reduviid subfamily Ectrichodiinae, the millipede assassin bugs (673 species, 118 genera) (Carpintero and Maldonado, 1990, 1991; Maldonado, 1990, 1995; Dougherty, 1995; Murugan and Livingstone, 1995; Kerzhner and Günther, 2003; Gil-Santana and Costa, 2005; Gil-Santana et al., 2004; 2005; Gil-Santana and Baena, 2009; Weirauch et al., 2009; Chłond, 2010a; Rédei and Tsai, 2012; Rédei et al., 2012; Gil-Santana et al., 2013; Gil-Santana, 2014, 2015). All described Madagascan ectrichodiine species and three of the six genera (*Distirogaster* Horváth, 1914; *Gibbosella* Chłond, 2010; *Toxopus* Bergroth, 1905) are endemic to the island. The 1819 ectrichodiine specimens collected by CAS's taxonomic inventory, together with 162 specimens loaned from various European and American museums and colleagues, has provided a unique opportunity to examine, document, and revise the dramatic undescribed species-level ectrichodiine diversity in Madagascar. We here describe three new genera and 63 new species, revise the existing genera *Toxopus* and *Gibbosella* and describe the males of both genera for the first time. We also transfer *Cleptria signoretii* Reuter, 1887, to *Toxopus*. The species *Gibbosella elongata* Chłond, 2010, *Glymmatophora crassipes* Horváth, 1914, and *Maraenaspis bidens* (Reuter), 1887, are redescribed, including, for the first time, descriptions of males for each species. The genus *Distirogaster* will be treated in a separate revision (Chłond et al., in prep.) due to the limited CAS material, the abundant material from European collections available to the second author (Chłond; taking the lead on the revision of *Distirogaster*), and timely finalization of the monograph; however, the taxon is included in the key to Madagascan genera and several specimens are sequenced for molecular data. Our taxonomic approach is largely focused on male specimens, since ~90% of the material collected

by CAS are males (likely due to collecting methods). Sexual dimorphism, where males are typically macropterous and females are apterous, is widespread among Ectrichodiinae and poses a significant problem for associating male and female specimens. Wherever feasible, males are associated with females (and immatures) based on a combination of morphology and geographic information and, where successfully amplified, molecular data. Cladistic methods are utilized in formulating generic concepts and informing diagnostic features of Madagascan genera and species, but results of these analyses are being published in a companion paper (Forthman and Weirauch, in review).

MATERIAL AND METHODS

Specimens and Databasing

A total of 1981 specimens were examined for this taxonomic revision, of which 1661 are males, 48 females, and 272 immatures; five additional specimens classified as *Distirogaster* were included in the molecular approach to associating dimorphic sexes. The skewed abundance of males compared to females and immatures is likely a result of collecting techniques employed by the CAS taxonomic survey: a significant proportion of the material (~80%) was collected in Malaise traps that typically favor the capture of winged insects, and thus in the case of Ectrichodiinae, male specimens. Leaf litter sifting, pitfall traps, light traps, and hand collecting resulted in a small sample (~12% of total material indicating collecting method from CAS material) of apterous female and immature specimens. Only 10 immatures were collected in Malaise traps.

Unique specimen identifier (USI) labels were affixed to specimens. All USI labels are comprised of the prefix UCR_ENT followed by an eight-digit number. USI codes are provided in the material examined section of each species description, but the prefix (UCR_ENT) is omitted to save space. Specimen information was databased using the American Museum of Natural History's Planetary Biodiversity Inventory (PBI) Arthropod Easy Capture Software database (http://www.research.amnh.org/pbi/locality/index.php) and are available through the Heteroptera Species Pages (http://research.amnh.org/pbi/heteropteraspeciespage/). Specimens with locality data including GPS coordinates were databased verbatim. For some older specimens deposited in European collections, locality records were georeferenced using Google Earth v7.1.2.2041 and GeoLocate (http://www.museum.tulane.edu/geolocate/) to determine geographic coordinates and elevation; locality data from these specimens were databased using current geopolitical names. In several cases, locality records on older specimens could not be successfully georeferenced.

Morphological Methods

External morphology and genitalic characters were examined using Nikon NiU (University of Silesia (SU); Chłond), Nikon SMZ1000 (University of California-Riverside (UCR); Forthman and Weirauch), Nikon SMZ1500 (SU and UCR), and Olympus SZH 10 (SU) dissecting microscopes. For males, genitalia (abdominal segment 8, pygophore, and phallus) were dissected from the body, cleared in heated 10% potassium hydroxide (KOH) for 3–8 minutes, washed in distilled water and 100% ethanol (EtOH), examined in glycerol, and permanently stored in genitalic capsules pinned to the specimen. For females, genitalia were dissected from the body using a similar protocol with the exception that the entire abdomen was detached from the thorax, heated in KOH initially, opened to expose internal structures, and subsequently cleared in heated KOH for 5–10 minutes. Female internal genitalia were permanently stored in genitalic capsules pinned to the specimen, while external abdominal structures were mounted to card stock pinned to the specimen. Genitalic structures were stained with Chlorazol Black E in 70% EtOH solution to provide contrast to membranous areas. Morphological characters were coded

in the Descriptive Language for Taxonomy (DELTA) program. Natural language taxonomic descriptions were subsequently generated.

Imaging, Distribution Maps, and Measurements

Dorsal (pls. 1–4), lateral (pls. 5–7), and ventral (pls. 8–11) habitus images were produced for representatives of species and types of some described species (except *Glymmatophora crassipes* provided by Dávid Rédei) (pl. 12) using Microptics-USA or Leica Z16 APO imaging systems LAS v4.3 (UCR) or a Nikon D300 on Fomei CS-920 copy stand (SU). Images of select morphological features (head: pl. 13; antenna: pl. 14; thorax: pl. 15; metathoracic gland evaporatorium and leg armature: pl. 16; wings: pl. 17; abdomen: pl. 18; male and female genitalia: pl. 19–23) were produced using a Leica Z16 APO imaging system. For genitalic images, genitalia were mounted on top of hand sanitizer and immersed in 70% EtOH. All images were stacked using LAS v4.3 and Zerene Stacker v1.04 (UCR). Distribution maps were created using SimpleMappr (http://www.simplemappr.net) based on GPS coordinates (maps 1–13). Measurements (in mm) were made using an Olympus SZX9 stereoscopic microscope with a micrometer (SU) and a Lomo MBC-10 stereoscopic microscope with a two-axes movable stage and two digital micrometers connected to a Microcode II RS-232 readout (UCR) (table 2). Because the hemelytron is often distorted in mounted specimens, body length is reported as the length from the clypeal apex to the posterior margin of the abdomen for the holotype in species descriptions, followed by a range where multiple specimens are available. In cases where the hemelytron obscured the posterior abdominal margin in dorsal view, a light source was positioned under the specimen and illuminated the outline of the abdomen under the hemelytron in dorsal view.

Identification Keys

An identification key is provided for genera found in Madagascar. Keys to species are given for each genus with more than one Madagascan species known. For genera having more than one extremely sexually dimorphic species, separate male and female identification keys are given. No specimens were examined for *Toxopus politus* Bergroth, 1905, which is known only from the female holotype, which may be lost (Jansson and Coscarón, 1989; Larry Huldén, personal commun.). This species is included in the key to females of this genus, but diagnostic features are based on the original description.

Molecular Data and Pairwise Genetic Distance Analysis

To associate males and females, sequencing and pairwise genetic distance analysis of part of the mitochondrial cytochrome oxidase I (COI) gene was performed following Zhang and Weirauch (2011) for 61 male specimens representing 39 species (including representatives of *Distirogaster*) and 10 female specimens representing 10 putative female-based species; sequence-quality specimens were not available for 35 male- and 17 putative female-based species. A hind leg was removed from each specimen for DNA extraction using QIAGEN DNeasy Blood and Tissue Kit. Amplification of partial COI was performed using COI primers C1-J-2183 (5′-CAACATTTATTTTGATTTTTTGG-3′, forward) (Simon et al., 1994) and C1-N-2609 (5′-CGAATACTGCTCCTATTGATA-3′, reverse) (Damgaard et al., 2000), GE Healthcare Life Sciences PuReTaq Ready-To-Go PCR Beads, and a Fisher Scientific Thermocycler with the following settings: denaturation 94° C (30 s), annealing 48° C (30 s), and extension 72° C (45 s) for 35 cycles, with an initial denaturation at 94° C (2 min) and a final extension at 72° C (7 min). PCR products were cleaned using Bioline SureClean. Sequencing was performed on an Applied Biosystems 3730xl DNA Sequencher at UCR's Institute for Integrative Genome Biology. Sequences were assembled and beginning and ending nucleotides with unresolved chromatograms were deleted in Sequencher v4.8. Sequences are available at Gen-

Bank under the accession numbers listed in table 1. Sequence alignment was performed with the online version of MAFFT (Katoh et al., 2005; Katoh et al., 2008; http://mafft.cbrc.jp/alignment/server/index.html) using the E-INS-i algorithm, which produced the shortest aligned dataset without internal gaps. TaxonDNA/SpeciesIdentifier 1.5alpha10 (Meier et al., 2006) was used to compute uncorrected pairwise genetic distances. The smallest distance between female and male sequences were determined and compared to intra- and interspecific distances. Following Zhang and Weirauch (2011), putative matches were then investigated further to assess morphological similarities and geographic proximity (DeSalle et al., 2005).

Terminology, Specimen Depositories, and Abbreviations

Terminology generally follows a subset of terms used by Dougherty (1995), Weirauch (2008b), and Forero and Weirauch (2012). Terminology for wing venation follows Hill (2014) and Weirauch (2008b), although homology concepts across Paraneoptera are currently being reviewed (Dávid Rédei, personal commun.). Abbreviations used in plates and/or text (capitalized abbreviations used within generic and species descriptions with the exception of standard wing venation abbreviations): **1A,** first anal vein; **aa,** articulatory apparatus (basal plate and basal plate extension); **ad,** aedeagus; **afsp,** anterior femoral subapical protuberance; **alp,** anterolateral pronotal projection; **ana,** antennal articulation; **anf,** antennifer; **aoc,** anteocular area; **ap,** antennal pseudoarticulation; **apl,** anterior pronotal lobe; **as,** antennal shield; **asp8,** abdominal spiracle 8; **bc,** bursa copulatrix; **bcl,** bursa copulatrix lateral lobe; **BFLA,** basiflagellomere; **bp,** basal plate; **BPE,** basal plate extension; **ca,** clypeal apex; **cl,** collar; **cly,** clypeus; **co,** corium; **cp,** corial pterostigma; **Cu,** cubitus; **DFLA,** distiflagellomere; **dl,** dorsal laterotergite; **dlp,** dorsal laterotergite protuberance; **dpes,** dorsal phallothecal sclerite-endosomal struts fusion; **dps,** dorsal phallothecal sclerite; **en,** endosoma; **es,** endosomal struts; **exM,** extension of M beyond M+Cu distal junction; **fmp,** femoral medial protuberance; **ft,** femoral tubercle; **gl,** gula; **is,** interocular sulcus; **L2,** labial segment II (first visible segment); **L3,** labial segment III (second visible segment); **L4,** labial segment IV (third visible segment); **lb,** labrum; **M,** media; **MGE,** metathoracic gland evaporatorium; **mms,** transverse suture between meso- and metasterna; **mo,** median oviduct; **mpp,** medial pygophore process; **mss,** mesosternum; **mtc,** metacoxa; **mts,** metasternum; **mxp,** maxillary plate; **nk,** neck; **oc,** ocelli; **ot,** ocellar tubercle; **p,** pedicel; **pa,** paramere; **pap,** trochanter and/or femoral papillae; **pc,** sternal paramedian carinae; **pcd,** postclypeal depression; **pfsp,** posterior femoral subapical protuberance; **pltf,** lateral furrow of posterior pronotal lobe; **pls,** pronotal longitudinal sulcus; **poc,** postocular; **ppl,** posterior pronotal lobe; **pts,** pronotal transverse suture; **R,** radius; **s,** scape; **S2,** sternite 2; **S3,** sternite 3; **sc,** scutellum; **sis,** sternal intersegmental suture; **sl,** synthlipsis; **sld,** sternal medial longitudinal depression; **T8,** tergite 8; **T9,** tergite 9; **T10,** tergite 10; **V1,** valvula 1; **V3,** valvula 3; **vap,** ventral anterior process of endosomal struts; **vf1,** valvifer 1; **vpp,** ventral posterior process of endosomal struts.

Abbreviations for depositories: **AMNH,** American Museum of Natural History, New York; **BMNH,** Natural History Museum, London, United Kingdom; **CAS,** California Academy of Sciences, California; **HNHM,** Hungarian Natural History Museum, Budapest, Hungary; **MMBC,** Moravské Museum, Brno, Czech Republic; **MNHN,** Muséum National d'Histoire Naturelle, Paris, France; **MRAC,** Musée Royal de l'Afrique Centrale, Tervuren, Belgium; **MTEC,** Montana State University, Montana; **NMW,** Naturhistorisches Museum, Vienna, Austria; **SU,** Department of Zoology, University of Silesia, Poland; **TLMF,** Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria; **UCR,** University of California, Riverside Entomological Research Museum, California; **USNM,** National Museum of Natural History, Washington D.C.

TABLE 1

GenBank Accesssion Numbers for COI Sequences

GenBank accession numbers of COI sequences. F – female; M – male; USI – unique specimen identifier; RCW – ethanol specimen collection number.

Species	Sex	USI (UCR_ENT)	RCW	GenBank Accession No.
Distirogaster tarsalis	M	00006366	2898	KR606396
Distirogaster n. sp.	M	00088090	3018	KR606395
Distirogaster n. sp.	M	00006369	2928	KR606394
Distirogaster n. sp.	M	00007158	2881	KR606393
Distirogaster n. sp.	F	00007088	2880	KR606392
Gibbosella conisimilis	M	00045495	2962	KR606400
Gibbosella conisimilis	M	00045427	2996	KR606401
Gibbosella notoconica	M	00044813	2908	KR606402
Gibbosella notoconica	M	00045558	2913	KR606403
Gibbosella pallidalata	M	00045653	2939	KR606404
Gibbosella planiscutum	M	00045296	2952	KR606405
Gibbosella quadocris	M	00044860	2938	KR606406
Gibbosella quadocris	M	00045651	2969	KR606407
Gibbosella quadocris	M	00007257	2988	KR606408
Gibbosella quadocris	M	00007166	2989	KR606409
Gibbosella sp.	F	00045157	2854	KR606410
Gibbosella sp.	F	00045452	2887	KR606411
Gibbosella sp.	F	00045079	2890	KR606412
Gibbosella sp.	F	00045646	2892	KR606413
Gibbosella sp.	F	00045569	3306	KR606414
Glymmatophora crassipes	M	00088087	3020	KR606415
Marojejycoris auranticorium	M	00045555	2924	KR606416
Marojejycoris brevifrons	M	00006480	2923	KR606417
Marojejycoris ranomafana	M	00048057	2944	KR606418
Tanindrazanus bemaraha	M	00006473	2964	KR606419
Tanindrazanus harinhali	M	00006553	2889	KR606420
Tanindrazanus irwini	M	00045339	2925	KR606421
Tanindrazanus joffrevillus	M	00007256	2918	KR606422
Tanindrazanus marginatus	M	00006887	2902	KR606423
Tanindrazanus nigripes	M	00006725	2899	KR606424
Tanindrazanus nigripes	M	00045465	2961	KR606425
Tanindrazanus nigripes	M	00045328	2990	KR606426
Tanindrazanus nigripes	M	00045228	2991	KR606427
Tanindrazanus nigripes	M	00006705	2993	KR606428
Tanindrazanus notatus	M	00044868	3312	KR606429

Tanindrazanus tenebricus	M	00006723	2931	KR606430
Tanindrazanus varicolor	M	00006250	2921	KR606431
Tanindrazanus varicolor	M	00006485	2922	KR606432
Tanindrazanus varicolor	M	00006482	2949	KR606433
Toxopus ampitavananima	M	00006732	3002	KR606434
Toxopus antsiranana	M	00007189	2955	KR606435
Toxopus antsiranana	M	00007191	2956	KR606436
Toxopus basalis	M	00045525	2907	KR606437
Toxopus brucei	M	00045338	2901	KR606438
Toxopus brucei	M	00045286	2912	KR606439
Toxopus brucei	M	00007133	3008	KR606440
Toxopus brucei	M	00007043	3009	KR606441
Toxopus brucei	M	00044971	3011	KR606442
Toxopus farafangana	M	00045332	2884	KR606443
Toxopus farafangana	M	00006729	2906	KR606444
Toxopus farafangana	M	00044965	3006	KR606445
Toxopus fisheri	M	00045431	2910	KR606446
Toxopus griswoldi	M	00006435	2916	KR606448
Toxopus griswoldi	F	00045042	2894	KR606447
Toxopus italaviana	M	00006428	2934	KR606449
Toxopus melobrunneus	M	00045243	2994	KR606450
Toxopus miandritsara	M	00044852	2919	KR606451
Toxopus miandritsara	M	00006148	3007	KR606452
Toxopus namoroka	M	00045251	2917	KR606453
Toxopus pallidus	M	00045432	2957	KR606454
Toxopus parkeri	M	00006973	3010	KR606455
Toxopus simulans	M	00045124	2980	KR606456
Toxopus toamasina	M	00007056	2951	KR606457
Toxopus toliara	M	00006589	2933	KR606458
Toxopus toliara	M	00006468	2966	KR606459
Toxopus toliara	M	00006688	2997	KR606460
Toxopus toliara	M	00006580	3001	KR606461
Toxopus vazimba	M	00006472	2953	KR606462
Ectrichodiinae sp.	F	00045353	2891	KR606397
Ectrichodiinae sp.	F	00044794	2893	KR606398
Ectrichodiinae sp.	F	00045654	2895	KR606399

TABLE 2

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Gibbosella andasibe																
Male ($N = 1$)	**Measurements**	**4.31**	**3.64**	**0.60**	**0.11**	**0.23**	**0.30**	**0.52**	**0.36**	**0.77**	**0.76**	**0.55**	**0.31**	**0.65**	**1.08**	**1.25**
Gibbosella betampona																
Male ($N = 1$)	**Measurements**	**7.02**	**6.40**	**0.91**	**0.24**	**0.23**	**0.54**	**0.82**	**0.75**	**1.16**	**1.35**	**0.88**	**0.34**	**1.19**	**1.77**	**2.28**
Gibbosella brunalvus																
Male ($N = 5$)	**Mean**	**5.05**	**4.93**	**0.85**	**0.21**	**0.27**	**0.44**	**0.67**	**0.55**	**0.95**	**1.04**	**0.69**	**0.36**	**0.93**	**1.36**	**1.60**
	SD	0.10	0.15	0.03	0.02	0.02	0.02	0.04	0.05	0.03	0.02	0.03	0.01	0.04	0.07	0.06
	Range	0.24	0.34	0.06	0.04	0.05	0.04	0.09	0.13	0.06	0.05	0.07	0.02	0.09	0.15	0.13
	Min.	4.92	4.79	0.81	0.20	0.25	0.42	0.62	0.49	0.91	1.03	0.66	0.34	0.88	1.30	1.54
	Max.	5.16	5.13	0.88	0.24	0.30	0.46	0.71	0.62	0.98	1.08	0.73	0.36	0.97	1.45	1.67
Female ($N = 1$)	**Measurements**	**4.54**	**4.54**	**0.92**	**0.25**	**0.30**	**0.69**	**0.22**	**0.31**	**0.64**	**0.69**	**0.64**	**0.39**	**0.97**	**0.90**	**1.79**
Gibbosella conisimilis																
Male ($N = 3$)	**Mean**	**8.82**	**8.07**	**1.32**	**0.32**	**0.36**	**0.61**	**1.14**	**0.99**	**1.22**	**1.62**	**1.10**	**0.51**	**1.34**	**2.19**	**2.76**
	SD	0.25	0.32	0.05	0.00	0.01	0.03	0.06	0.13	0.03	0.02	0.02	0.03	0.05	0.09	0.16
	Range	0.49	0.58	0.10	0.01	0.02	0.06	0.12	0.25	0.06	0.04	0.04	0.07	0.10	0.17	0.30
	Min.	8.61	7.86	1.27	0.32	0.36	0.57	1.10	0.88	1.20	1.60	1.08	0.48	1.29	2.12	2.65
	Max.	9.10	8.44	1.37	0.33	0.37	0.64	1.21	1.12	1.26	1.64	1.12	0.54	1.40	2.30	2.95
Gibbosella elongata																
Male ($N = 1$)	**Measurements**	**10.50**	**9.90**	**1.70**	**0.62**	**0.47**	**0.80**	**1.28**	**0.91**	**1.89**	**2.21**	**1.40**	**0.48**	**1.49**	**2.44**	**3.45**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Gibbosella fulva																
Male *(N = 2)*	**Mean**	**7.58**	**7.39**	**1.14**	**0.37**	**0.42**	**0.71**	**1.02**	**0.80**	**1.03**	**1.56**	**0.90**	**0.39**	**1.41**	**2.21**	**2.44**
	SD	0.03	0.02	0.02	0.01	0.00	0.01	0.01	0.00	0.03	0.01	0.01	0.00	0.01	0.01	0.02
	Range	0.04	0.03	0.03	0.01	0.00	0.01	0.02	0.00	0.04	0.02	0.01	0.00	0.01	0.02	0.03
	Min.	7.56	7.37	1.12	0.36	0.42	0.70	1.01	0.80	1.01	1.55	0.90	0.39	1.41	2.20	2.42
	Max.	7.60	7.40	1.15	0.37	0.42	0.71	1.03	0.80	1.05	1.57	0.91	0.39	1.42	2.22	2.45
Gibbosella mantella																
Male (*N* = 1)	**Measurements**	**5.79**	**5.42**	**0.88**	**0.19**	**0.21**	**0.53**	**0.70**	**0.61**	**1.14**	**1.21**	**0.85**	**0.27**	**1.07**	**1.52**	**1.96**
Gibbosella megafrons																
Male (*N* = 2)	**Mean**	**4.94**	**4.42**	**0.75**	**0.19**	**0.27**	**0.37**	**0.93**	**0.53**	**1.02**	**1.01**	**0.60**	**0.35**	**0.78**	**1.31**	**1.58**
	SD	1.00	0.90	0.14	0.08	0.04	0.04	0.52	0.10	0.07	0.12	0.07	0.00	0.11	0.28	0.38
	Range	1.41	1.27	0.20	0.12	0.06	0.06	0.73	0.13	0.10	0.18	0.10	0.00	0.15	0.39	0.54
	Min.	4.24	3.78	0.65	0.13	0.24	0.34	0.57	0.47	0.97	0.92	0.55	0.35	0.70	1.12	1.31
	Max.	5.65	5.05	0.85	0.25	0.30	0.40	1.30	0.60	1.07	1.10	0.65	0.35	0.85	1.51	1.85
Gibbosella nitida																
Male (*N* = 1)	**Measurements**	**5.30**	**4.75**	**0.90**	**0.33**	**0.35**	**0.45**	**0.62**	**0.52**	**0.85**	**0.89**	**0.65**	**0.35**	**0.90**	**1.45**	**1.61**
Gibbosella notoconica																
Male (*N* = 2)	**Mean**	**9.62**	**9.01**	**1.37**	**0.34**	**0.33**	**0.64**	**1.27**	**1.06**	**1.53**	**1.90**	**1.29**	**0.48**	**1.35**	**2.27**	**3.31**
	SD	0.67	0.67	0.09	0.02	0.04	0.01	0.09	0.17	0.06	0.19	0.13	0.04	0.08	0.15	0.27

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Gibbosella notoconica cont.																
	Range	0.95	0.95	0.13	0.02	0.05	0.02	0.13	0.25	0.09	0.26	0.18	0.06	0.11	0.21	0.39
	Min.	9.15	8.53	1.31	0.33	0.31	0.63	1.21	0.94	1.49	1.76	1.20	0.45	1.30	2.17	3.11
	Max.	10.09	9.48	1.43	0.35	0.36	0.65	1.33	1.18	1.57	2.03	1.39	0.52	1.40	2.38	3.50
Gibbosella pallidacorium																
Male ($N = 1$)	**Measurements**	**6.76**	**5.78**	**0.84**	**0.20**	**0.23**	**0.35**	**0.81**	**0.65**	**1.04**	**1.34**	**0.86**	**0.30**	**0.97**	**1.67**	**1.89**
Gibbosella pallidalata																
Male ($N = 5$)	**Mean**	**5.68**	**5.18**	**0.90**	**0.24**	**0.29**	**0.41**	**0.70**	**0.58**	**1.07**	**1.10**	**0.66**	**0.36**	**0.96**	**1.52**	**1.83**
	SD	0.22	0.18	0.07	0.03	0.04	0.01	0.05	0.06	0.03	0.03	0.02	0.01	0.03	0.04	0.07
	Range	0.57	0.46	0.18	0.08	0.10	0.03	0.15	0.15	0.09	0.08	0.04	0.03	0.07	0.09	0.15
	Min.	5.36	4.88	0.82	0.20	0.23	0.39	0.63	0.50	1.02	1.06	0.63	0.34	0.91	1.47	1.75
	Max.	5.93	5.34	1.00	0.27	0.33	0.42	0.78	0.65	1.11	1.14	0.67	0.37	0.98	1.56	1.89
Gibbosella planiscutum																
Male ($N = 5$)	**Mean**	**5.50**	**5.32**	**0.88**	**0.24**	**0.27**	**0.52**	**0.68**	**0.50**	**0.95**	**1.08**	**0.72**	**0.38**	**1.02**	**1.47**	**1.83**
	SD	0.27	0.38	0.08	0.03	0.03	0.02	0.05	0.05	0.07	0.07	0.03	0.03	0.06	0.10	0.17
	Range	0.68	0.99	0.20	0.06	0.08	0.05	0.13	0.11	0.16	0.16	0.08	0.07	0.15	0.20	0.42
	Min.	5.28	4.91	0.77	0.21	0.24	0.50	0.60	0.48	0.85	0.98	0.68	0.35	0.97	1.38	1.67
	Max.	5.96	5.90	0.97	0.27	0.32	0.55	0.73	0.58	1.01	1.14	0.76	0.42	1.12	1.58	2.09
Gibbosella planiscutum																
Female ($N = 2$)	**Mean**	**4.92**	**4.92**	**0.86**	**0.26**	**0.27**	**0.71**	**0.25**	**0.33**	**0.71**	**0.75**	**0.68**	**0.42**	**1.07**	**0.96**	**1.86**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Gibbosella planiscutum cont.																
	SD	0.20	0.20	0.01	0.04	0.02	0.01	0.03	0.04	0.04	0.07	0.03	0.01	0.03	0.04	0.06
	Range	0.28	0.28	0.02	0.05	0.03	0.02	0.05	0.05	0.06	0.10	0.04	0.01	0.04	0.06	0.08
	Min.	4.78	4.78	0.85	0.23	0.25	0.70	0.23	0.30	0.68	0.70	0.66	0.41	1.05	0.93	1.82
	Max.	5.06	5.06	0.87	0.29	0.29	0.73	0.28	0.36	0.74	0.80	0.70	0.42	1.09	0.99	1.90
Gibbosella quadocris																
Male ($N = 5$)	**Mean**	**6.46**	**5.57**	**0.95**	**0.25**	**0.30**	**0.49**	**0.78**	**0.65**	**1.06**	**1.22**	**0.72**	**0.37**	**1.02**	**1.61**	**1.93**
	SD	0.22	0.20	0.06	0.04	0.02	0.01	0.04	0.05	0.06	0.08	0.02	0.02	0.04	0.08	0.04
	Range	0.56	0.46	0.15	0.11	0.04	0.03	0.09	0.11	0.15	0.21	0.05	0.04	0.10	0.21	0.11
	Min.	6.23	5.33	0.88	0.21	0.28	0.47	0.76	0.59	1.00	1.12	0.70	0.35	0.97	1.53	1.87
	Max.	6.79	5.78	1.03	0.33	0.32	0.50	0.85	0.70	1.15	1.33	0.76	0.39	1.07	1.74	1.99
Gibbosella vangocris																
Male ($N = 5$)	**Mean**	**8.20**	**7.25**	**1.22**	**0.38**	**0.36**	**0.60**	**0.99**	**0.87**	**1.40**	**1.59**	**0.90**	**0.42**	**1.26**	**2.04**	**2.60**
	SD	0.43	0.30	0.06	0.04	0.02	0.02	0.09	0.04	0.05	0.11	0.04	0.03	0.05	0.08	0.13
	Range	1.15	0.81	0.14	0.08	0.05	0.06	0.23	0.11	0.12	0.29	0.11	0.07	0.13	0.20	0.36
	Min.	7.55	6.80	1.14	0.34	0.34	0.57	0.85	0.83	1.34	1.48	0.84	0.39	1.17	1.91	2.38
	Max.	8.70	7.61	1.28	0.42	0.39	0.63	1.09	0.95	1.45	1.77	0.95	0.46	1.31	2.11	2.74
Glymmatophora carolae																
Male ($N = 4$)	**Mean**	**15.77**	**15.77**	**2.22**	**0.80**	**0.63**	**1.75**	**2.58**	**1.30**	**2.40**	**2.94**	**2.34**	**1.22**	**3.74**	**5.32**	**5.66**
	SD	0.84	0.84	0.45	0.24	0.08	0.18	0.14	0.17	0.23	0.31	0.05	0.05	0.09	0.14	0.63

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Glymmatophora carolae cont.																
	Range	2.01	2.01	0.88	0.46	0.18	0.34	0.35	0.36	0.48	0.68	0.11	0.11	0.19	0.31	1.39
	Min.	14.90	14.90	1.82	0.56	0.53	1.57	2.42	1.17	2.26	2.69	2.30	1.19	3.67	5.20	5.10
	Max.	16.91	16.91	2.70	1.02	0.71	1.91	2.77	1.53	2.74	3.37	2.41	1.30	3.86	5.51	6.49
Glymmatophora crassipes																
Male ($N = 5$)	**Mean**	**17.94**	**17.94**	**3.19**	**1.43**	**0.52**	**3.23**	**1.41**	**1.23**	**2.25**	**2.56**	**2.36**	**1.27**	**4.85**	**4.83**	**7.85**
	SD	1.54	1.54	0.32	0.16	0.07	0.34	0.14	0.13	0.29	0.35	0.19	0.09	0.39	0.42	0.99
	Range	4.08	4.08	0.70	0.31	0.19	0.85	0.34	0.30	0.70	0.77	0.45	0.23	0.90	0.99	2.40
	Min.	15.52	15.52	2.80	1.29	0.45	2.70	1.28	1.12	1.90	2.13	2.10	1.10	4.20	4.11	6.30
	Max.	19.60	19.60	3.50	1.60	0.64	3.55	1.62	1.42	2.60	2.90	2.55	1.33	5.10	5.10	8.70
Glymmatophora crassipes																
Female ($N = 5$)	**Mean**	**20.78**	**20.78**	**3.36**	**1.44**	**0.85**	**3.57**	**1.57**	**1.51**	**2.36**	**2.52**	**2.53**	**1.43**	**5.40**	**5.27**	**9.29**
	SD	2.24	2.24	0.41	0.28	0.23	0.50	0.13	0.12	0.05	0.16	0.30	0.22	0.68	0.80	1.18
	Range	5.60	5.60	1.12	0.72	0.65	1.26	0.30	0.28	0.10	0.30	0.70	0.50	1.56	1.75	2.80
	Min.	18.30	18.30	2.88	1.18	0.55	2.84	1.40	1.37	2.30	2.40	2.20	1.20	4.64	4.45	7.90
	Max.	23.90	23.90	4.00	1.90	1.20	4.10	1.70	1.65	2.40	2.70	2.90	1.70	6.20	6.20	10.70
Maraenaspis bidens																
Male ($N = 2$)	**Mean**	**21.85**	**21.85**	**3.25**	**1.26**	**0.64**	**3.93**	**1.33**	**1.63**	**3.33**	**3.75**	**2.66**	**1.53**	**5.11**	**5.03**	**9.21**
	SD	0.32	0.32	0.20	0.21	0.02	0.54	0.01	0.03	0.05	0.19	0.08	0.05	0.32	0.31	0.34
	Range	0.45	0.45	0.28	0.30	0.03	0.77	0.01	0.04	0.07	0.27	0.11	0.08	0.45	0.44	0.48

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Maraenaspis bidens cont.																
	Min.	21.63	21.63	3.11	1.41	0.65	3.55	1.34	1.61	3.30	3.61	2.72	1.57	4.88	4.81	8.97
	Max.	22.08	22.08	3.39	1.41	0.65	4.32	1.34	1.65	3.37	3.88	2.72	1.57	5.34	5.25	9.45
Female (*N* = 2)	**Mean**	**22.15**	**22.15**	**3.65**	**1.60**	**1.15**	**3.74**	**1.72**	**1.37**	**2.90**	—	**2.78**	**1.61**	**4.88**	**4.14**	**8.26**
	SD	1.20	1.20	0.21	0.14	0.07	0.09	0.04	0.06	0.00	—	0.14	0.03	0.03	0.05	0.07
	Range	1.70	1.70	0.30	0.20	0.10	0.13	0.06	0.08	0.00	—	0.20	0.04	0.04	0.07	0.10
	Min.	21.30	21.30	3.50	1.50	1.10	3.67	1.69	1.33	2.90	—	2.78	1.61	4.88	4.10	8.21
	Max.	23.00	23.00	3.80	1.70	1.20	3.80	1.75	1.41	2.90	—	2.98	1.65	4.92	4.17	8.31
Marojejycoris auranticorium																
Male (*N* = 4)	**Mean**	**9.35**	**8.96**	**1.71**	**0.57**	**0.57**	**0.66**	**1.16**	**0.77**	**1.56**	**1.82**	**1.20**	**0.59**	**1.66**	**2.46**	**2.84**
	SD	0.34	0.29	0.07	0.02	0.03	0.10	0.06	0.06	0.07	0.09	0.04	0.06	0.04	0.04	0.14
	Range	0.69	0.64	0.16	0.04	0.07	0.22	0.12	0.14	0.18	0.20	0.08	0.14	0.10	0.10	0.30
	Min.	8.96	8.54	1.64	0.55	0.53	0.54	1.13	0.68	1.47	1.69	1.14	0.53	1.60	2.41	2.70
	Max.	9.65	9.18	1.80	0.59	0.59	0.76	1.25	0.82	1.65	1.88	1.22	0.67	1.69	2.51	3.00
Marojejycoris brevifrons																
Male (*N* = 5)	**Mean**	**7.19**	**6.58**	**1.23**	**0.30**	**0.34**	**0.51**	**0.87**	**0.66**	**1.26**	**1.33**	**0.97**	**0.35**	**1.28**	**1.88**	**2.16**
	SD	0.96	0.66	0.08	0.04	0.02	0.05	0.07	0.07	0.09	0.11	0.04	0.02	0.11	0.13	0.17
	Range	2.28	1.50	0.21	0.11	0.05	0.13	0.17	0.18	0.22	0.26	0.10	0.06	0.22	0.29	0.41
	Min.	5.63	5.63	1.08	0.24	0.31	0.44	0.79	0.60	1.13	1.18	0.93	0.31	1.15	1.73	1.99
	Max.	7.91	7.13	1.29	0.35	0.36	0.57	0.95	0.77	1.34	1.44	1.02	0.37	1.36	2.02	2.40

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

Species		Length										Width				
		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Marojejycoris francais																
Male ($N = 2$)	**Mean**	**6.99**	**6.50**	**1.15**	**0.39**	**0.34**	**0.50**	**0.90**	**0.63**	**0.93**	**1.27**	**0.89**	**0.44**	**1.34**	**1.92**	**2.19**
	SD	0.62	0.46	0.04	0.05	0.06	0.01	0.04	0.08	0.09	0.11	0.06	0.00	0.11	0.15	0.16
	Range	0.87	0.65	0.06	0.07	0.09	0.02	0.05	0.12	0.12	0.15	0.09	0.01	0.15	0.22	0.22
	Min.	6.55	6.18	1.12	0.35	0.30	0.49	0.87	0.57	0.87	1.19	0.84	0.44	1.27	1.81	2.08
	Max.	7.42	6.82	1.18	0.42	0.39	0.51	0.93	0.69	1.00	1.34	0.93	0.44	1.42	2.03	2.30
Marojejycoris notadichroa																
Male ($N = 5$)	**Mean**	**8.46**	**7.94**	**1.44**	**0.48**	**0.47**	**0.65**	**1.03**	**0.78**	**1.29**	**1.46**	**1.35**	**0.56**	**1.56**	**2.19**	**2.54**
Marojejycoris notadichroa cont.																
	SD	0.45	0.54	0.09	0.03	0.05	0.02	0.08	0.03	0.08	0.05	0.65	0.04	0.11	0.18	0.31
	Range	1.01	1.33	0.24	0.08	0.12	0.05	0.22	0.07	0.21	0.13	1.50	0.09	0.25	0.46	0.71
	Min.	8.08	7.40	1.33	0.44	0.41	0.62	0.90	0.74	1.22	1.41	1.00	0.53	1.42	1.95	2.18
	Max.	9.09	8.73	1.57	0.52	0.53	0.67	1.12	0.81	1.43	1.54	2.51	0.62	1.67	2.41	2.88
Marojejycoris ranomafana																
Male ($N = 2$)	**Mean**	**6.20**	**5.46**	**1.01**	**0.25**	**0.38**	**0.48**	**0.71**	**0.55**	**1.12**	**1.18**	**0.70**	**0.37**	**1.10**	**1.56**	**1.87**
	SD	0.18	0.06	0.01	0.02	0.00	0.07	0.01	0.07	0.04	0.05	0.03	0.00	0.00	0.01	0.04
	Range	0.25	0.08	0.02	0.03	0.00	0.10	0.01	0.10	0.06	0.07	0.04	0.00	0.00	0.01	0.06
	Min.	6.08	5.41	1.00	0.24	0.37	0.43	0.70	0.50	1.09	1.15	0.68	0.37	1.10	1.56	1.84
	Max.	6.33	5.50	1.02	0.27	0.38	0.52	0.71	0.61	1.15	1.21	0.72	0.37	1.10	1.57	1.90

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

Species		Length										Width				
		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Tanindrazanus amboasaricus																
Male ($N = 4$)	**Mean**	**15.91**	**15.06**	**2.74**	**1.11**	**0.69**	**1.19**	**1.92**	**1.17**	**2.29**	**2.99**	**2.03**	**0.75**	**2.47**	**3.83**	**5.03**
	SD	1.25	0.85	0.27	0.09	0.07	0.10	0.14	0.08	0.09	0.20	0.15	0.11	0.04	0.31	0.36
	Range	2.70	1.75	0.60	0.22	0.17	0.20	0.30	0.18	0.20	0.45	0.30	0.25	0.09	0.65	0.80
	Min.	14.60	14.30	2.45	1.02	0.62	1.10	1.80	1.05	2.20	2.75	1.90	0.60	2.42	3.50	4.70
	Max.	17.30	16.05	3.05	1.24	0.79	1.30	2.10	1.23	2.40	3.20	2.20	0.85	2.51	4.15	5.50
Tanindrazanus andohahela																
Male ($N = 4$)	**Mean**	**10.83**	**10.77**	**1.94**	**0.73**	**0.49**	**0.88**	**1.35**	**0.90**	**1.52**	**1.99**	**1.46**	**0.65**	**2.01**	**2.86**	**3.44**
	SD	0.42	0.32	0.12	0.10	0.03	0.06	0.04	0.04	0.08	0.08	0.06	0.04	0.10	0.11	0.15
Tanindrazanus andohahela cont.																
	Range	1.03	0.77	0.25	0.22	0.05	0.13	0.10	0.10	0.18	0.18	0.14	0.09	0.19	0.25	0.32
	Min.	10.34	10.34	1.78	0.58	0.47	0.79	1.31	0.86	1.41	1.89	1.38	0.60	1.92	2.75	3.22
	Max.	11.36	11.10	2.04	0.80	0.53	0.92	1.41	0.96	1.59	2.07	1.52	0.69	2.11	3.00	3.54
Tanindrazanus anjozorobeus																
Male ($N = 3$)	**Mean**	**17.02**	**16.91**	**2.99**	**0.97**	**1.07**	**1.01**	**2.23**	**1.55**	**2.32**	**3.08**	**2.37**	**0.74**	**2.71**	**4.32**	**5.72**
	SD	0.45	0.61	0.33	0.13	0.22	0.12	0.20	0.04	0.04	0.02	0.01	0.02	0.08	0.03	0.11
	Range	0.83	1.12	0.59	0.23	0.41	0.22	0.35	0.07	0.08	0.04	0.02	0.04	0.15	0.05	0.22
	Min.	16.50	16.20	2.61	0.83	0.81	0.88	2.00	1.51	2.27	3.06	2.36	0.72	2.65	4.30	5.60
	Max.	17.33	17.32	3.20	1.06	1.22	1.10	2.35	1.58	2.35	3.10	2.38	0.76	2.80	4.35	5.82

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Tanindrazanus antananarivo																
Male (*N*= 5)	**Mean**	**13.26**	**12.81**	**2.20**	**0.79**	**0.61**	**0.87**	**1.58**	**1.14**	**1.90**	**2.39**	**1.64**	**0.65**	**2.09**	**3.30**	**4.27**
	SD	0.82	0.67	0.17	0.09	0.08	0.12	0.11	0.08	0.09	0.11	0.08	0.02	0.09	0.19	0.39
	Range	1.99	1.59	0.43	0.23	0.20	0.32	0.26	0.18	0.22	0.29	0.20	0.06	0.21	0.46	1.00
	Min.	12.71	12.41	2.04	0.70	0.48	0.71	1.45	1.07	1.82	2.28	1.58	0.63	2.04	3.17	3.88
	Max.	14.69	14.00	2.47	0.93	0.69	1.03	1.71	1.25	2.04	2.56	1.78	0.69	2.25	3.63	4.88
Tanindrazanus bemaraha																
Male (*N* = 2)	**Mean**	**13.50**	**13.50**	**2.48**	**0.96**	**0.62**	**1.09**	**1.63**	**1.15**	**2.12**	**2.77**	**1.69**	**0.80**	**2.27**	**3.45**	**4.40**
	SD	0.61	0.61	0.17	0.01	0.06	0.05	0.09	0.00	0.00	0.08	0.00	0.05	0.04	0.06	0.07
	Range	0.86	0.86	0.23	0.02	0.09	0.06	0.13	0.01	0.01	0.11	0.01	0.07	0.06	0.08	0.09
Tanindrazanus bemaraha cont.																
	Min.	13.07	13.07	2.36	0.95	0.57	1.05	1.56	1.14	2.11	2.71	1.68	0.77	2.24	3.41	4.35
	Max.	13.93	13.93	2.60	0.97	0.66	1.12	1.69	1.15	2.12	2.83	1.69	0.83	2.30	3.50	4.44
Tanindrazanus brunneus																
Male (*N* = 1)	**Measurements**	**10.77**	**10.31**	**1.91**	**0.79**	**0.54**	**0.75**	**1.41**	**1.11**	**1.90**	**2.44**	**1.26**	**0.70**	**1.89**	**2.86**	**3.54**
Tanindrazanus hannajagodae																
Male (*N* = 3)	**Mean**	**23.33**	**23.18**	**3.33**	**1.35**	**0.74**	**1.73**	**3.34**	**2.12**	**3.52**	**4.51**	**2.76**	**1.25**	**3.83**	**6.41**	**7.98**
	SD	0.75	0.64	0.27	0.12	0.05	0.17	0.12	0.21	0.10	0.09	0.03	0.04	0.12	0.29	0.09
	Range	1.37	1.22	0.51	0.22	0.09	0.31	0.24	0.42	0.18	0.18	0.06	0.08	0.24	0.58	0.17
	Min.	22.47	22.47	3.02	1.26	0.68	1.63	3.24	1.93	3.46	4.44	2.73	1.21	3.69	6.10	7.91
	Max.	23.84	23.69	3.53	1.48	0.77	1.93	3.48	2.35	3.63	4.62	2.79	1.29	3.94	6.68	8.08

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

Species		Length										Width				
		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Tanindrazanus harinhali																
Male ($N = 5$)	**Mean**	**11.35**	**11.01**	**1.77**	**0.61**	**0.53**	**0.89**	**1.62**	**0.83**	**1.72**	**2.13**	**1.44**	**0.70**	**2.05**	**3.08**	**3.60**
	SD	0.58	0.59	0.10	0.04	0.04	0.09	0.09	0.11	0.10	0.12	0.09	0.07	0.15	0.19	0.25
	Range	1.61	1.50	0.29	0.10	0.09	0.24	0.25	0.22	0.28	0.31	0.23	0.17	0.36	0.51	0.60
	Min.	10.57	10.39	1.62	0.55	0.50	0.76	1.50	0.70	1.57	1.96	1.34	0.63	1.92	2.87	3.37
	Max.	12.18	11.89	1.91	0.65	0.59	1.00	1.75	0.92	1.85	2.27	1.57	0.80	2.28	3.38	3.97
Tanindrazanus irwini																
Male ($N = 5$)	**Mean**	**21.28**	**21.05**	**3.31**	**1.40**	**0.73**	**1.39**	**2.91**	**1.65**	**3.25**	**4.19**	**2.54**	**1.13**	**3.54**	**5.57**	**6.44**
	SD	1.31	1.37	0.26	0.21	0.09	0.10	0.25	0.18	0.09	0.10	0.08	0.06	0.17	0.32	0.49
Tanindrazanus irwini cont.																
	Range	3.44	3.82	0.62	0.52	0.23	0.24	0.64	0.39	0.22	0.26	0.21	0.14	0.45	0.86	1.26
	Min.	19.32	18.95	2.91	1.08	0.64	1.32	2.54	1.52	3.11	4.05	2.42	1.05	3.28	5.04	5.83
	Max.	22.76	22.76	3.53	1.60	0.87	1.56	3.18	1.90	3.33	4.31	2.64	1.19	3.73	5.90	7.09
Tanindrazanus joffrevillus																
Male ($N = 1$)	**Measurements**	**11.19**	**11.19**	**1.99**	**0.70**	**0.59**	**1.03**	**1.37**	**1.00**	**1.82**	**2.36**	**1.58**	**0.83**	**2.15**	**2.95**	**3.84**
Tanindrazanus kathrynae																
Male ($N = 1$)	**Mean**	**12.61**	**12.27**	**2.25**	**0.87**	**0.65**	**0.89**	**1.66**	**1.02**	**1.69**	**2.35**	**1.48**	**0.73**	**2.08**	**3.26**	**3.86**
	SD	0.41	0.39	0.04	0.05	0.02	0.07	0.15	0.12	0.12	0.21	0.06	0.05	0.11	0.17	0.11
	Range	1.08	1.05	0.10	0.14	0.06	0.16	0.40	0.28	0.30	0.50	0.17	0.12	0.29	0.42	0.31
	Min.	12.20	11.62	2.22	0.80	0.62	0.81	1.41	0.87	1.57	2.22	1.41	0.66	1.95	3.01	3.69

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
	Max.	13.28	12.67	2.32	0.93	0.67	0.97	1.81	1.15	1.88	2.72	1.58	0.78	2.24	3.43	3.99
Tanindrazanus mahafaly																
Male ($N = 5$)	**Mean**	**18.96**	**18.96**	**2.72**	**0.91**	**0.76**	**1.32**	**2.49**	**1.82**	**2.64**	**3.24**	**2.37**	**0.98**	**3.21**	**5.12**	**6.08**
	SD	0.77	0.77	0.13	0.08	0.05	0.07	0.17	0.16	0.08	0.13	0.19	0.03	0.09	0.18	0.19
	Range	1.89	1.89	0.35	0.19	0.12	0.17	0.40	0.32	0.20	0.32	0.47	0.08	0.22	0.45	0.42
	Min.	18.03	18.03	2.50	0.77	0.68	1.24	2.29	1.64	2.53	3.05	2.24	0.94	3.09	4.86	5.88
	Max.	19.92	19.92	2.85	0.97	0.81	1.40	2.69	1.96	2.72	3.37	2.71	1.02	3.31	5.31	6.30
Tanindrazanus marginatus																
Male ($N = 5$)	**Mean**	**15.53**	**15.33**	**2.66**	**0.97**	**0.58**	**0.97**	**1.96**	**1.33**	**2.25**	**2.80**	**2.08**	**0.76**	**2.43**	**3.95**	**5.51**
Tanindrazanus marginatus cont.																
	SD	1.81	1.67	0.23	0.06	0.08	0.09	0.25	0.10	0.32	0.33	0.20	0.06	0.20	0.43	0.68
	Range	4.01	3.81	0.58	0.16	0.17	0.19	0.53	0.26	0.66	0.69	0.43	0.14	0.46	0.94	1.40
	Min.	13.62	13.62	2.42	0.92	0.50	0.89	1.69	1.21	1.90	2.44	1.85	0.69	2.22	3.45	4.78
	Max.	17.63	17.43	3.00	1.07	0.68	1.07	2.21	1.47	2.56	3.14	2.29	0.84	2.68	4.39	6.18
Tanindrazanus marojejy																
Male ($N = 4$)	**Mean**	**18.43**	**18.22**	**2.96**	**1.32**	**0.73**	**1.47**	**2.59**	**1.25**	**2.88**	**3.72**	**2.05**	**0.92**	**3.25**	**4.97**	**6.57**
	SD	0.98	1.19	0.31	0.15	0.17	0.19	0.19	0.06	0.39	0.30	0.10	0.16	0.16	0.10	0.43
	Range	2.40	2.67	0.75	0.33	0.41	0.44	0.38	0.12	0.95	0.73	0.22	0.39	0.32	0.21	0.95
	Min.	17.20	17.05	2.61	1.12	0.52	1.28	2.42	1.19	2.37	3.32	1.93	0.71	3.10	4.89	6.15
	Max.	19.60	19.72	3.36	1.45	0.93	1.72	2.80	1.31	3.32	4.05	2.15	1.10	3.42	5.10	7.10

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

Species		Length										Width				
		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Tanindrazanus nigripes																
Male ($N = 5$)	**Mean**	**12.72**	**12.26**	**2.20**	**0.93**	**0.55**	**0.90**	**1.56**	**1.06**	**1.77**	**2.42**	**1.56**	**0.74**	**2.20**	**3.23**	**4.00**
	SD	0.43	0.33	0.07	0.06	0.09	0.09	0.06	0.12	0.09	0.08	0.02	0.01	0.06	0.06	0.16
	Range	0.89	0.85	0.18	0.13	0.20	0.20	0.17	0.33	0.20	0.18	0.05	0.03	0.17	0.14	0.36
	Min.	12.37	11.78	2.09	0.86	0.45	0.83	1.47	0.90	1.64	2.35	1.53	0.72	2.13	3.16	3.84
	Max.	13.26	12.63	2.27	0.99	0.65	1.03	1.64	1.23	1.84	2.54	1.58	0.75	2.30	3.30	4.20
Tanindrazanus notatus																
Male ($N = 2$)	**Mean**	**11.48**	**11.20**	**1.85**	**0.66**	**0.45**	**0.92**	**1.52**	**0.92**	**1.79**	**2.19**	**1.44**	**0.69**	**2.04**	**3.03**	**3.61**
	SD	1.85	1.46	0.18	0.04	0.05	0.14	0.30	0.00	0.17	0.30	0.15	0.06	0.22	0.46	0.64
Tanindrazanus notatus cont.																
	Range	2.62	2.06	0.25	0.06	0.07	0.19	0.43	0.00	0.24	0.42	0.21	0.08	0.32	0.65	0.91
	Min.	10.17	10.17	1.73	0.63	0.42	0.82	1.31	0.92	1.68	1.98	1.33	0.65	1.88	2.71	3.15
	Max.	12.79	12.24	1.98	0.68	0.49	1.01	1.74	0.92	1.91	2.40	1.55	0.73	2.20	3.36	4.06
Tanindrazanus simulans																
Male ($N = 2$)	**Mean**	**16.10**	**15.25**	**2.79**	**1.36**	**0.69**	**1.34**	**2.11**	**1.18**	**2.37**	**2.68**	**1.89**	**0.81**	**2.43**	**3.93**	**4.93**
	SD	0.14	0.21	0.01	0.04	0.01	0.04	0.12	0.03	0.04	0.04	0.01	0.00	0.05	0.03	0.09
	Range	0.20	0.30	0.02	0.06	0.02	0.05	0.17	0.04	0.06	0.05	0.02	0.00	0.07	0.04	0.13
	Min.	16.00	15.10	2.78	1.33	0.68	1.31	2.02	1.16	2.34	2.65	1.89	0.81	2.43	3.91	4.86
	Max.	16.20	15.40	2.80	1.39	0.70	1.36	2.19	1.20	2.40	2.70	1.91	0.81	2.50	3.95	4.99
Tanindrazanus tenebricus																
Male ($N = 5$)	**Mean**	**16.15**	**16.12**	**2.80**	**0.97**	**0.74**	**1.25**	**2.01**	**1.35**	**2.55**	**3.23**	**2.34**	**0.87**	**2.74**	**4.13**	**5.48**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Tanindrazanus tenebricus cont.																
	SD	0.64	0.62	0.22	0.18	0.06	0.07	0.16	0.08	0.11	0.16	0.06	0.03	0.10	0.21	0.28
	Range	1.63	1.63	0.56	0.43	0.15	0.18	0.36	0.21	0.29	0.41	0.14	0.07	0.23	0.59	0.63
	Min.	15.40	15.40	2.61	0.85	0.69	1.15	1.82	1.22	2.39	3.01	2.28	0.83	2.61	3.83	5.13
	Max.	17.02	17.02	3.17	1.28	0.84	1.33	2.18	1.43	2.68	3.43	2.42	0.90	2.85	4.41	5.76
Tanindrazanus varicolor																
Male (*N* = 5)	**Mean**	**16.31**	**16.00**	**2.53**	**0.98**	**0.64**	**1.06**	**2.26**	**1.18**	**2.31**	**2.98**	**2.01**	**0.94**	**2.58**	**4.20**	**4.95**
	SD	0.18	0.08	0.05	0.09	0.07	0.02	0.03	0.04	0.07	0.09	0.04	0.04	0.05	0.09	0.11
	Range	0.41	0.23	0.13	0.19	0.18	0.06	0.06	0.08	0.18	0.23	0.09	0.11	0.12	0.22	0.27
Tanindrazanus varicolor cont.																
	Min.	16.07	15.89	2.48	0.89	0.57	1.03	2.23	1.14	2.21	2.90	1.97	0.87	2.51	4.06	4.77
	Max.	16.48	16.12	2.61	1.08	0.75	1.09	2.29	1.22	2.39	3.13	2.05	0.98	2.63	4.28	5.04
Tanindrazanus vohiparara																
Male (*N* = 1)	**Measurements**	**12.11**	**11.20**	**1.96**	**0.73**	**0.33**	**0.68**	**1.54**	**0.99**	**1.68**	**2.04**	**1.78**	**0.59**	**1.91**	**3.00**	**3.65**
Toliarus karinae																
Male (*N* = 1)	**Measurements**	**12.10**	**11.70**	**2.20**	**1.05**	**0.60**	**1.10**	**1.48**	**1.05**	**2.15**	**1.85**	**1.50**	**0.80**	**2.24**	**2.98**	**3.80**
Toliarus trichrous																
Male (*N* = 5)	**Mean**	**8.98**	**8.22**	**1.55**	**0.60**	**0.39**	**0.69**	**1.19**	**0.73**	**1.23**	**1.57**	**1.20**	**0.64**	**1.62**	**2.42**	**2.57**
	SD	0.62	0.76	0.06	0.03	0.04	0.10	0.14	0.09	0.10	0.11	0.12	0.06	0.20	0.27	0.32

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toliarus trichrous cont.																
	Range	1.58	1.76	0.14	0.08	0.07	0.21	0.30	0.23	0.27	0.31	0.29	0.14	0.47	0.66	0.78
	Min.	8.10	7.22	1.47	0.58	0.36	0.57	1.04	0.60	1.12	1.42	1.07	0.58	1.36	2.06	2.20
	Max.	9.68	8.97	1.61	0.65	0.43	0.78	1.34	0.83	1.39	1.73	1.36	0.72	1.83	2.72	2.98
Toxopus ambohitantely																
Male ($N = 5$)	**Mean**	**10.51**	**9.99**	**1.66**	**0.61**	**0.44**	**0.81**	**1.27**	**1.01**	**1.55**	**1.82**	**1.22**	**0.66**	**1.93**	**2.74**	**3.30**
	SD	0.24	0.13	0.06	0.04	0.04	0.06	0.04	0.10	0.05	0.05	0.02	0.01	0.05	0.09	0.05
	Range	0.55	0.35	0.17	0.09	0.10	0.12	0.10	0.22	0.14	0.13	0.05	0.03	0.13	0.24	0.13
	Min.	10.22	9.83	1.55	0.57	0.39	0.76	1.20	0.90	1.50	1.76	1.19	0.64	1.87	2.64	3.23
	Max.	10.78	10.18	1.72	0.65	0.48	0.87	1.30	1.12	1.63	1.89	1.24	0.67	2.00	2.88	3.36
Toxopus ampitavananima																
Male ($N = 5$)	**Mean**	**11.34**	**11.20**	**1.80**	**0.56**	**0.42**	**1.00**	**1.37**	**1.16**	**1.78**	**2.09**	**1.64**	**0.79**	**2.23**	**3.17**	**3.63**
	SD	0.62	0.66	0.10	0.05	0.04	0.11	0.10	0.03	0.12	0.21	0.14	0.04	0.14	0.24	0.39
	Range	1.32	1.41	0.25	0.10	0.10	0.26	0.22	0.08	0.29	0.56	0.35	0.10	0.31	0.53	0.92
	Min.	10.71	10.50	1.65	0.52	0.38	0.88	1.26	1.11	1.60	1.78	1.52	0.76	2.11	2.86	3.31
	Max.	12.03	11.91	1.91	0.62	0.48	1.13	1.48	1.20	1.89	2.33	1.87	0.85	2.42	3.39	4.22
Toxopus antsiranana																
Male ($N = 3$)	**Mean**	**12.18**	**11.81**	**2.12**	**0.76**	**0.47**	**1.05**	**1.57**	**1.10**	**1.76**	**2.19**	**1.58**	**0.66**	**2.26**	**3.24**	**3.99**
	SD	0.61	0.62	0.09	0.07	0.04	0.07	0.12	0.10	0.21	0.26	0.14	0.05	0.10	0.10	0.38
	Range	1.19	1.11	0.17	0.14	0.07	0.14	0.22	0.17	0.38	0.52	0.25	0.10	0.17	0.19	0.66

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus antsiranana cont.																
	Min.	11.51	11.10	2.04	0.70	0.43	0.98	1.43	0.99	1.52	1.91	1.43	0.61	2.15	3.13	3.55
	Max.	12.70	12.21	2.21	0.84	0.51	1.12	1.65	1.16	1.90	2.43	1.68	0.71	2.32	3.32	4.21
Toxopus basalis																
Male ($N = 5$)	**Mean**	**12.39**	**12.24**	**1.77**	**0.56**	**0.35**	**1.06**	**1.61**	**1.25**	**1.73**	**2.13**	**1.72**	**0.76**	**2.54**	**3.44**	**4.27**
	SD	0.69	0.66	0.12	0.07	0.04	0.04	0.12	0.14	0.07	0.07	0.10	0.03	0.14	0.22	0.19
	Range	1.45	1.52	0.31	0.20	0.11	0.08	0.32	0.30	0.19	0.18	0.23	0.07	0.31	0.51	0.45
	Min.	11.62	11.49	1.57	0.45	0.30	1.02	1.45	1.13	1.65	2.02	1.62	0.73	2.40	3.21	3.97
	Max.	13.07	13.01	1.88	0.64	0.41	1.10	1.77	1.43	1.84	2.20	1.85	0.80	2.70	3.72	4.43
Toxopus brucei																
Male ($N = 5$)	**Mean**	**11.93**	**11.84**	**1.73**	**0.52**	**0.40**	**1.18**	**1.55**	**1.17**	**1.70**	**2.06**	**1.74**	**0.88**	**2.58**	**3.42**	**4.17**
Toxopus brucei cont.																
	SD	0.75	0.80	0.11	0.06	0.04	0.06	0.13	0.17	0.09	0.15	0.14	0.04	0.11	0.27	0.31
	Range	1.64	1.70	0.27	0.15	0.09	0.15	0.28	0.36	0.23	0.41	0.31	0.10	0.26	0.58	0.64
	Min.	11.06	11.00	1.59	0.44	0.37	1.10	1.41	0.99	1.57	1.85	1.59	0.84	2.44	3.14	3.87
	Max.	12.70	12.70	1.86	0.59	0.46	1.24	1.69	1.35	1.80	2.26	1.90	0.94	2.70	3.73	4.51
Toxopus farafangana																
Male ($N = 5$)	**Mean**	**9.89**	**9.81**	**1.64**	**0.46**	**0.41**	**0.95**	**1.18**	**0.97**	**1.36**	**1.71**	**1.38**	**0.58**	**1.91**	**2.72**	**3.52**
	SD	0.72	0.66	0.17	0.06	0.04	0.09	0.11	0.14	0.09	0.13	0.08	0.04	0.15	0.21	0.27
	Range	1.73	1.61	0.42	0.18	0.10	0.23	0.30	0.37	0.22	0.34	0.21	0.09	0.36	0.50	0.68

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus farafangana cont.																
	Min.	9.14	9.05	1.47	0.36	0.37	0.86	1.01	0.81	1.27	1.54	1.30	0.54	1.76	2.47	3.16
	Max.	10.87	10.66	1.89	0.54	0.47	1.09	1.30	1.18	1.48	1.88	1.51	0.63	2.12	2.97	3.84
Toxopus fisheri																
Male ($N = 5$)	**Mean**	**10.95**	**10.29**	**1.89**	**0.66**	**0.48**	**0.97**	**1.34**	**0.96**	**1.38**	**1.95**	**1.37**	**0.65**	**2.08**	**2.85**	**3.45**
	SD	0.44	0.48	0.09	0.10	0.05	0.07	0.10	0.10	0.16	0.21	0.06	0.05	0.05	0.12	0.13
	Range	1.09	1.26	0.23	0.25	0.12	0.16	0.27	0.27	0.39	0.45	0.15	0.12	0.11	0.25	0.35
	Min.	10.50	9.84	1.76	0.54	0.42	0.89	1.18	0.82	1.27	1.72	1.30	0.61	2.02	2.70	3.26
	Max.	11.59	11.09	1.99	0.79	0.55	1.05	1.45	1.09	1.67	2.17	1.45	0.72	2.13	2.95	3.61
Toxopus griswoldi																
Male ($N = 5$)	**Mean**	**9.61**	**9.39**	**1.76**	**0.59**	**0.47**	**0.89**	**1.24**	**0.84**	**1.32**	**1.66**	**1.39**	**0.73**	**2.05**	**2.68**	**3.23**
	SD	0.41	0.42	0.08	0.08	0.04	0.06	0.07	0.18	0.07	0.08	0.06	0.03	0.08	0.13	0.28
Toxopus griswoldi cont.																
	Range	1.01	1.02	0.21	0.21	0.09	0.15	0.18	0.48	0.17	0.22	0.16	0.09	0.24	0.32	0.69
	Min.	8.98	8.74	1.65	0.51	0.40	0.82	1.15	0.66	1.25	1.52	1.34	0.69	1.92	2.47	2.84
	Max.	9.99	9.76	1.87	0.71	0.49	0.97	1.34	1.14	1.43	1.74	1.49	0.78	2.16	2.79	3.53
Female ($N = 1$)	**Measurements**	**11.75**	**11.75**	**2.73**	**1.02**	**0.76**	**1.68**	**0.68**	**0.47**	**1.28**	**1.70**	**1.77**	**1.13**	**2.66**	**2.60**	**3.88**
Toxopus insignis																
Male ($N = 5$)	**Mean**	**11.58**	**10.59**	**1.79**	**0.58**	**0.45**	**0.95**	**1.44**	**0.96**	**1.65**	**2.16**	**1.45**	**0.72**	**2.13**	**3.10**	**3.90**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus insignis cont.																
	SD	0.75	0.74	0.13	0.07	0.02	0.08	0.11	0.06	0.11	0.13	0.06	0.04	0.15	0.27	0.37
	Range	1.74	1.67	0.31	0.18	0.04	0.19	0.29	0.13	0.25	0.28	0.14	0.10	0.32	0.58	0.92
	Min.	10.75	9.73	1.68	0.52	0.43	0.86	1.30	0.88	1.49	2.00	1.39	0.66	1.97	2.77	3.44
	Max.	12.49	11.41	1.99	0.70	0.47	1.05	1.60	1.01	1.74	2.27	1.52	0.76	2.29	3.35	4.36
Toxopus italaviana																
Male (*N* = 5)	**Mean**	**11.44**	**10.42**	**1.81**	**0.62**	**0.45**	**1.01**	**1.48**	**0.99**	**1.51**	**2.17**	**1.46**	**0.78**	**2.24**	**3.06**	**3.85**
	SD	0.28	0.17	0.06	0.05	0.03	0.03	0.06	0.08	0.08	0.16	0.04	0.06	0.07	0.10	0.18
	Range	0.76	0.38	0.15	0.14	0.08	0.08	0.13	0.19	0.22	0.39	0.08	0.13	0.18	0.26	0.46
	Min.	11.09	10.25	1.71	0.54	0.42	0.96	1.41	0.91	1.37	2.05	1.43	0.69	2.17	2.95	3.60
	Max.	11.86	10.63	1.86	0.69	0.49	1.04	1.54	1.10	1.59	2.44	1.51	0.82	2.35	3.21	4.06
Toxopus melobrunneus																
Male (*N* = 5)	**Mean**	**14.66**	**14.29**	**2.18**	**0.72**	**0.48**	**0.96**	**1.84**	**1.35**	**2.14**	**2.77**	**1.75**	**0.74**	**2.49**	**3.82**	**4.93**
Toxopus melobrunneus cont.																
	SD	0.49	0.39	0.13	0.08	0.02	0.09	0.17	0.11	0.06	0.27	0.07	0.03	0.10	0.19	0.20
	Range	1.28	1.00	0.35	0.20	0.06	0.22	0.41	0.23	0.18	0.69	0.15	0.07	0.24	0.50	0.53
	Min.	14.15	13.96	1.99	0.62	0.43	0.85	1.73	1.24	2.06	2.54	1.68	0.70	2.41	3.63	4.62
	Max.	15.43	14.95	2.33	0.82	0.50	1.07	2.13	1.47	2.24	3.23	1.83	0.78	2.65	4.13	5.15
Toxopus miandritsara																
Male (*N* = 2)	**Mean**	**10.05**	**9.79**	**1.58**	**0.54**	**0.39**	**0.81**	**1.20**	**0.83**	**1.31**	**1.64**	**1.20**	**0.59**	**1.81**	**2.71**	**3.24**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus miandritsara cont.																
	SD	0.44	0.39	0.01	0.01	0.04	0.00	0.04	0.04	0.07	0.10	0.00	0.03	0.08	0.15	0.01
	Range	0.62	0.55	0.02	0.02	0.06	0.01	0.05	0.06	0.11	0.14	0.00	0.04	0.11	0.22	0.01
	Min.	9.73	9.51	1.57	0.53	0.36	0.80	1.17	0.80	1.25	1.57	1.19	0.58	1.76	2.61	3.23
	Max.	10.36	10.06	1.58	0.55	0.42	0.81	1.23	0.86	1.36	1.72	1.20	0.61	1.87	2.82	3.24
Toxopus namoroka																
Male (*N* = 2)	**Mean**	**11.50**	**11.50**	**1.84**	**0.64**	**0.44**	**1.13**	**1.52**	**1.24**	**1.79**	**2.37**	**1.68**	**0.88**	**2.47**	**3.30**	**3.89**
	SD	0.08	0.08	0.14	0.04	0.04	0.06	0.02	0.14	0.04	0.11	0.02	0.02	0.03	0.06	0.17
	Range	0.11	0.11	0.20	0.06	0.06	0.09	0.02	0.19	0.05	0.15	0.03	0.02	0.04	0.09	0.25
	Min.	11.44	11.44	1.75	0.61	0.42	1.09	1.51	1.15	1.76	2.30	1.67	0.86	2.45	3.26	3.77
	Max.	11.56	11.56	1.94	0.66	0.47	1.18	1.53	1.34	1.81	2.45	1.69	0.89	2.49	3.35	4.01
Toxopus pallidus																
Male (*N* = 2)	**Mean**	**9.26**	**8.98**	**1.40**	**0.40**	**0.39**	**0.74**	**1.16**	**0.99**	**1.37**	**1.70**	**1.16**	**0.56**	**1.73**	**2.56**	**3.02**
	SD	0.23	0.17	0.09	0.07	0.01	0.03	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.06	0.08
Toxopus pallidus cont.																
	Range	0.32	0.25	0.13	0.10	0.01	0.04	0.06	0.09	0.00	0.00	0.00	0.01	0.00	0.09	0.11
	Min.	9.10	8.85	1.34	0.35	0.39	0.72	1.13	0.95	1.37	1.70	1.16	0.56	1.73	2.52	2.96
	Max.	9.42	9.10	1.47	0.45	0.40	0.76	1.18	1.03	1.37	1.70	1.16	0.56	1.74	2.60	3.07
Toxopus parkeri																
Male (*N* = 5)	**Mean**	**12.51**	**12.22**	**1.80**	**0.61**	**0.37**	**1.12**	**1.63**	**1.43**	**1.67**	**2.15**	**1.85**	**0.89**	**2.73**	**3.62**	**4.47**

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus parkeri cont.																
	SD	0.79	0.69	0.09	0.07	0.03	0.06	0.12	0.16	0.12	0.13	0.13	0.05	0.19	0.26	0.33
	Range	2.07	1.82	0.23	0.16	0.06	0.14	0.32	0.38	0.30	0.32	0.32	0.14	0.46	0.63	0.83
	Min.	11.77	11.52	1.69	0.55	0.33	1.04	1.47	1.27	1.57	2.04	1.74	0.84	2.57	3.43	4.09
	Max.	13.84	13.34	1.92	0.71	0.39	1.18	1.79	1.66	1.87	2.36	2.05	0.98	3.03	4.06	4.92
Toxopus signoretii																
Male (*N* = 1)	**Measurements**	**12.10**	**12.20**	**2.30**	**0.90**	**0.62**	**1.40**	**1.70**	**1.46**	**1.89**	**2.50**	**2.15**	**0.98**	**2.83**	**3.75**	**4.20**
Toxopus simulans																
Male (*N* = 4)	**Mean**	**11.96**	**11.30**	**1.79**	**0.55**	**0.40**	**0.99**	**1.43**	**0.93**	**1.73**	**2.06**	**1.55**	**0.68**	**2.17**	**3.18**	**3.90**
	SD	0.22	0.34	0.08	0.06	0.03	0.04	0.07	0.04	0.01	0.05	0.04	0.03	0.06	0.06	0.20
	Range	0.46	0.74	0.17	0.15	0.07	0.08	0.17	0.08	0.02	0.11	0.08	0.07	0.13	0.16	0.37
	Min.	11.70	10.89	1.69	0.47	0.36	0.95	1.35	0.88	1.72	2.01	1.53	0.66	2.12	3.09	3.70
	Max.	12.16	11.62	1.85	0.62	0.43	1.03	1.51	0.96	1.74	2.11	1.60	0.72	2.24	3.25	4.08
Toxopus steineri																
Male (*N* = 3)	**Mean**	**11.48**	**11.24**	**1.89**	**0.59**	**0.49**	**0.88**	**1.53**	**1.31**	**1.69**	**1.94**	**1.52**	**0.76**	**2.22**	**3.12**	**3.57**
Toxopus steineri cont.																
	SD	0.42	0.31	0.10	0.06	0.04	0.07	0.10	0.12	0.08	0.02	0.02	0.03	0.08	0.03	0.26
	Range	0.76	0.59	0.20	0.12	0.09	0.13	0.20	0.22	0.15	0.04	0.04	0.05	0.16	0.05	0.48
	Min.	11.00	11.00	1.80	0.53	0.45	0.81	1.43	1.23	1.64	1.93	1.50	0.74	2.15	3.10	3.38
	Max.	11.76	11.59	2.00	0.65	0.53	0.95	1.63	1.45	1.79	1.96	1.53	0.80	2.31	3.15	3.87

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus tibialis																
Male ($N = 3$)	**Mean**	**14.80**	**14.60**	**2.28**	**0.64**	**0.49**	**1.48**	**1.92**	**1.50**	**2.22**	**2.73**	**2.34**	**1.10**	**3.08**	**4.18**	**4.99**
	SD	0.53	0.76	0.16	0.10	0.02	0.03	0.16	0.14	0.02	0.12	0.08	0.06	0.09	0.24	0.24
	Range	1.01	1.50	0.32	0.17	0.03	0.06	0.30	0.28	0.03	0.24	0.17	0.11	0.17	0.47	0.45
	Min.	14.39	13.89	2.10	0.58	0.47	1.44	1.79	1.36	2.20	2.62	2.25	1.04	2.98	3.98	4.72
	Max.	15.40	15.40	2.43	0.75	0.50	1.50	2.09	1.65	2.24	2.86	2.42	1.16	3.14	4.45	5.17
Toxopus toamasina																
Male ($N = 5$)	**Mean**	**12.21**	**12.02**	**1.87**	**0.54**	**0.41**	**1.09**	**1.50**	**1.16**	**1.77**	**2.21**	**1.83**	**0.72**	**2.39**	**3.30**	**4.16**
	SD	0.35	0.48	0.07	0.04	0.04	0.10	0.10	0.10	0.04	0.06	0.08	0.03	0.11	0.16	0.18
	Range	0.88	1.20	0.20	0.10	0.11	0.24	0.24	0.21	0.11	0.15	0.21	0.08	0.29	0.41	0.47
	Min.	11.69	11.22	1.77	0.49	0.36	1.00	1.32	1.06	1.72	2.15	1.73	0.69	2.20	3.04	3.85
	Max.	12.57	12.41	1.97	0.59	0.46	1.23	1.56	1.27	1.83	2.30	1.94	0.77	2.50	3.44	4.32
Toxopus toliara																
Male ($N = 5$)	**Mean**	**11.63**	**11.33**	**1.99**	**0.69**	**0.47**	**1.02**	**1.41**	**1.13**	**1.43**	**2.09**	**1.52**	**0.74**	**2.19**	**3.10**	**3.85**
	SD	0.96	0.93	0.19	0.10	0.04	0.07	0.20	0.13	0.17	0.28	0.12	0.05	0.16	0.35	0.48
Toxopus toliara cont.																
	Range	2.28	2.15	0.47	0.27	0.10	0.17	0.49	0.29	0.43	0.67	0.30	0.12	0.39	0.87	1.19
	Min.	10.68	10.39	1.74	0.57	0.41	0.95	1.24	1.02	1.24	1.89	1.40	0.68	1.96	2.74	3.22
	Max.	12.96	12.54	2.21	0.84	0.51	1.12	1.74	1.30	1.67	2.57	1.70	0.80	2.35	3.61	4.41

TABLE 2 *(Continued)*

Measurements (in mm) of Ectrichodiinae

Abbreviations: Cly-Abd, clypeus to abdomen; AntOc, anteocular; PostOc, postocular; AntPron, anterior pronotal lobe; PostPron, posterior pronotal lobe.

		Length										Width				
Species		Total Length	Clyp-Abd	Head	Ant Oc	Post Oc	Ant Pron	Post Pron	Scutel-lum	Scape	Pedicel	Head	Synth-lipsis	Ant Pron	Post Pron	Abd
Toxopus vazimba																
Male ($N = 4$)	**Mean**	**11.99**	**11.99**	**2.00**	**0.65**	**0.45**	**1.05**	**1.62**	**1.16**	**1.74**	**2.25**	**1.71**	**0.89**	**2.50**	**3.38**	**3.79**
	SD	0.59	0.59	0.14	0.06	0.04	0.20	0.11	0.13	0.09	0.10	0.08	0.02	0.13	0.21	0.17
	Range	1.44	1.44	0.30	0.15	0.09	0.46	0.26	0.29	0.20	0.24	0.18	0.04	0.30	0.45	0.37
	Min.	11.27	11.27	1.79	0.56	0.40	0.77	1.46	1.01	1.66	2.10	1.62	0.87	2.31	3.08	3.63
	Max.	12.71	12.71	2.09	0.71	0.49	1.23	1.71	1.30	1.86	2.34	1.80	0.91	2.61	3.52	4.00

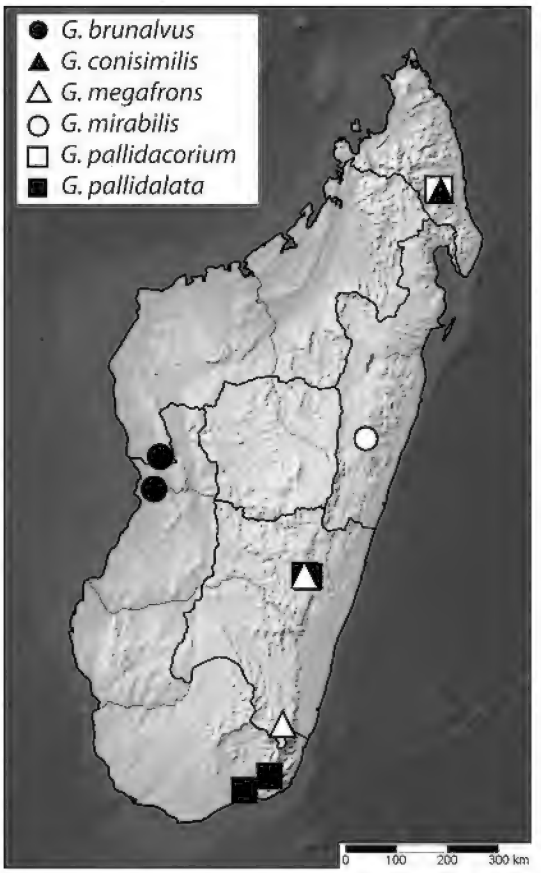
RESULTS OF THE MOLECULAR ASSOCIATION OF MALES AND FEMALES

Pairwise genetic distances of COI between intraspecific males were less than 3.75%. Between interspecific males within a genus or between genera, COI pairwise genetic distances were greater than 7.10%. Of the 10 females that were sequenced for COI, two had pairwise genetic distances with two male-based species that were less than 0.80% (*Toxopus griswoldi*: 0.76% [pls. 3, 4, 7, 10]; an undescribed species of *Distirogaster*: 0.75%). These two results were corroborated by examination of geographic distance between male and female specimens (*Toxopus griswoldi*: same locality; *Distirogaster* sp.: 2.28 km), as well as morphology (see taxonomic descriptions and discussions). For the remaining eight females (pl. 24) sequenced, female-to-male pairwise distances exceeded 9.5%, and therefore, COI sequences did not offer a way of associating these females with conspecific males. In addition, these females were collected at localities that were near those of males belonging to several species, such that geographic proximity could not be used as a line of evidence. Generic and species diagnoses based on males heavily rely on structural differences on the head, thorax, and wings, among other features. However, all eight females have drastically reduced morphological features (e.g., head structures, scutellum, wings, etc.), and three of these females could not be unambiguously associated with any of the male-based genera treated in this monograph. The remaining five females could be associated with the genus *Gibbosella* based on morphology (see generic discussion) but could not be unambiguously associated to any male-based species within this genus.

TAXONOMY

Identification Key to Ectrichodiinae Genera of Madagascar

1. Abdominal spiracles circular; body small (<10 mm); dull colored 2
– Abdominal spiracles ovoid to elliptical; body medium to large (≥10 mm); color variable. . 3
2. Male: Metathoracic gland evaporatorium (MGE) not visible in lateral view (pl. 16B, C); scutellar processes dorsally directed in lateral view (except in *Gibbosella planiscutum*) (pl. 15C); hemelytron with distal part of M and Cu fused basally (pl. 17A); dorsal laterotergites with posterior protuberances (pl. 18A). Female: apterous; 6- or 8-segmented antenna with short vestiture; dorsal laterotergites with posterior protuberances reduced to absent. Bicolored, dark brown and pale in both sexes . . . . . .*Gibbosella* Chłond
– Males only known. MGE visible in lateral view (pl. 16A); scutellar processes horizontally directed (i.e., parallel to dorsal abdominal surface) in lateral view (pl. 15D); hemelytron with distal part of M and Cu separate basally (pl. 17B, C); dorsal laterotergites unarmed (pl. 18B); coloration generally uniform, orange-brown. . . . . *Marojejycoris*, new genus
3. Distiflagellomere (DFLA) (pl. 14A, C) divided into four pseudosegments; antenna thus appearing 8-segmented; very pronounced anterolateral protuberances on anterior pronotal lobe (pl. 15A); metallic coloration . . 4
– DFLA divided into two or three pseudosegments; antenna thus appearing 6- or 7-segmented; anterolateral protuberances on anterior pronotal lobe much smaller or absent; coloration not metallic 5
4. Dorsal laterotergites with posterior protuberances (pl. 18A); abdominal sternites with paramedian, longitudinal carinae and shallow medial longitudinal depression (pl. 18C). Male: macropterous; subquadrate head in lateral view; relatively slender abdomen. Female: apterous; more ovate head shape; abdomen wider . . . . .



MAP 1. Localities of *Gibbosella brunalvus*, *G. conisimilis*, *G. megafrons*, *G. mirabilis*, *G. pallidacorium*, and *G. pallidalata*.

5. Forefemur with anterior subapical and medial protuberances and mid and hind femora with anterior and posterior subapical and medial protuberances in both sexes (pl. 16E); body glabrous except on antenna and tibiae; DFLA divided into two pseudosegments, thus, antenna appearing 6-segmented ..... *Glymmatophora* Stål
– Femora unarmed in males, with small papillae (pl. 16D) in females; body with dense vestiture; DFLA divided into two or three pseudosegments, thus, antenna appearing 6- or 7-segmented 7
6. Males only known; meso- and metasterna completely divided by a transverse suture (pl. 15F); dorsal laterotergite II not distinctly expanded; head subtriangular in lateral view (pl. 13G–I) 8
– Male: meso- and metasterna not completely divided by a transverse suture (pl. 15E); dorsal laterotergite II distinctly expanded; head short and subquadrate (pl. 13K) to subovate or elongate cylindrical (pl. 13J). Female: apterous; shiny blackish coloration, sometimes with pale yellow markings; 7-segmented antenna with short vestiture; fore- and mid trochanters with small papillae (pl. 16D) ..... *Toxopus* Bergroth
7. DFLA divided into three pseudosegments; antenna thus appearing 7-segmented (except 6-segmented in some specimens of *Tanindrazanus harinhali*); posterior pronotal lobe smooth or transversely striated..... ..... *Tanindrazanus*, new genus
– DFLA divided into two pseudosegments; antenna thus appearing 6-segmented; posterior pronotal lobe punctate .... *Toliarus*, new genus

Gibbosella Chłond, 2010

Plates 1, 5, 8, 12, 13C, 15C, 16D, 17A, 18A, 19A, 19B, 20A–C, 21A, 21B, 22A, 23A, 23B, 24; maps 1–3

Gibbosella Chłond, 2010, 2522: 62.

Type species: *Gibbosella mirabilis* Chłond, 2010.

Revised diagnosis: Males recognized by the small body size, shallow anteromedial depression on the ventral head surface, large antennal shield that does not conceal the antennal insertion in lateral view, depressed postclypeus, 8-segmented antenna (6-segmented in *G. pallidalata*), dorsally oriented long and slender scutellar processes (short, stout, and horizontally oriented in *G. planiscutum*), basally fused distal part of M and Cu, dorsal laterotergites transversely bicolored pale yellow and brown and with posterolateral protuberances, and apex of abdomen with very long setae. Females recognized by the apterous

condition, reduced pale markings, head about as wide as anterior margin of pronotum, 6- or 8-segmented antenna with short vestiture, scape (pl. 14A) longer than distance between anterior margin of eye and apex of head, anterior pronotal lobe much longer than posterior lobe, scutellar processes reduced and dorsally directed, and dorsal laterotergites with posterior protuberances reduced or absent. Males are similar to males of the monotypic Afrotropical genus *Synavecoris* Villiers, 1968b (pl. 12), but the presence of the antennal shield, lack of femoral armature, separation of the proximal part of M and Cu (pl. 17A), and armature of the dorsal laterotergites differentiate males of *Gibbosella* from *Synavecoris*. Due to reduced morphological features in both genera, females of *Gibbosella* appear very similar to females of *Synavecoris* but may be distinguished by the apterous condition, dorsally directed scutellar processes, and the pronotum lacking lateral carinae.

Redescription: **MALE:** Macropterous, small body size. COLORATION: Pale to dark brown color patterns. VESTITURE: Sparse to dense, semierect to erect, long pale to brown setae on head, thorax, legs, corium of hemelytra, and abdomen; setae longer on apex of abdomen compared to rest of vestiture on body; setae on tibiae stouter and denser near apex. STRUCTURE: Head (pl. 13C): Circular, ovoid, or cylindrical; shorter than pronotum; ventrally with shallow anteromedial depression; clypeal apex not dorsally elevated relative to labrum; maxillary plate not reaching dorsal clypeal surface (pl. 13E, I); postocular (hind eye margin to posterior constriction; Pl. 13J) broad in dorsal view (pl. 13B); ocelli present, separated by less than diameter of ocellus; distinct constriction between postocular and neck; antennal shield not concealing antennal insertion in lateral view; scape surpassing clypeal apex; pedicel (pl. 14A) slightly curved; flagellum subdivided into BFLA (pl. 14A, B) and DFLA (pl. 14A, C); BFLA divided into two pseudosegments; DFLA divided into two or four pseudosegments; antenna thus appearing 6- or 8-segmented. Thorax (pl. 15C): Pronotum wider than long, anterior margin distinctly concave, smooth, collar distinct (pl. 15B); anterior pronotal lobe shorter than posterior lobe, more than half as wide as posterior lobe; pronotal longitudinal furrow reaching anterior but not posterior margin of pronotum, foveate posteriorly (pl. 15B); pronotal transverse furrow distinct; lateral depressions on posterior pronotal lobe distinct; scutellum with two moderately separated apical processes, directed dorsally in most species (horizontally directed in *G. planiscutum*), disc medially depressed; MGE with shallow meshlike cuticle that does not extend dorsally in lateral view (pl. 16B, C); fossula spongiosa on foretibia, absent on mid tibia in some species; hemelytron (pl. 17A) with corium restricted to areas adjacent to basal wing veins, with pterostigmalike appearance on anterodistal margin; proximal parts of M and Cu veins separate; distal parts of M and Cu fused basally; distal part of M extending beyond apical junction of M+Cu. Abdomen (pl. 18A): Dorsal laterotergites II–VI with posterolateral protuberances; sternal intersegmental sutures (pl. 18B, C) carinulate; spiracles circular; pygophore process directed dorsoposteriad, not surpassing posterior margin of pygophore; DPS apex rounded (pl. 21A, B); endosomal struts with anterior ventral process (pl. 22G); endosoma weakly to strongly sclerotized medially (pl. 21A, B). **FEMALE:** Differs from males in the following characteristics: apterous; reduced pale markings; head about as wide as anterior pronotal margin; in some species, head ventrally with small tubercles; postclypeus not depressed; antennal shield not expanded; ocelli absent; eye small; antennal vestiture much shorter; scape longer than distance between anterior margin of eye and apex of head; collar not distinct; anterior pronotal lobe much longer than and as wide as or wider than posterior lobe (pl. 15A), sometimes elevated dorsally; pronotal longitudinal furrow reduced to deep medial depression near posterior margin of anterior pronotal lobe (pl. 15A) and present or obsolete on posterior lobe; lateral depressions on posterior pronotal lobe present or obsolete; scutellum processes weakly developed, dorsally directed; meso- and metasterna convex; in some species, fore- and mid

trochanters and base of forefemur with ventral patches of small papillae (pl. 16D) and femora ventrally with small tubercles (pl. 16D); hind femur slightly curved in dorsal view; fossula spongiosa larger; dorsal laterotergites with posterior protuberances reduced or absent; external genitalia short, platelike (pl. 23A, B).

Distribution: Species are known from all provinces and occur in habitats between 9–1600 m elevation. Macrohabitats are described as spiny forests, tropical forests, mixed tropical forests, low and high altitude rainforests, tropical dry forests, montane rainforest, sclerophyl forests, dwarf littoral forests, and secondary tropical forests.

Discussion: Chłond (2010a) recently described this genus and two species, *G. mirabilis* and *G. elongata*, from single female representatives with no males or immatures known. One male specimen from undetermined material showed some morphological features similar to the described females, e.g., an elongate cylindrical head, a slightly dorsally pronounced anterior pronotal lobe, dorsally directed scutellar processes, general color pattern, and body size. Given the morphological similarities, we assign this male specimen to the genus and to the species *G. elongata* (see species redescription for discussion on species-level assignment). Examination of other undetermined male specimens revealed similar morphology to the previously mentioned male: general coloration, body size, dorsally directed scutellar processes, slightly to very distinctly dorsally pronounced anterior pronotal lobe, and wing venation pattern, among many other features. Given the morphological similarities between these males and the male of *G. elongata*, we assign these males to *Gibbosella* despite the fact that head shapes in these males are not elongated but rather spherical or short and ovoid.

Nineteen female specimens have been identified as representatives of this genus based on morphological features mentioned in the generic redescription, e.g., small body sizes, antennal segmentation, slightly dorsally projecting scutellar processes, and dark coloration. Despite availability of morphological, molecular, and geographic data, we were unable to associate 16 of them with male-based species. The remaining three female specimens were associated with two male-based species (*G. brunalvus* and *G. planiscutum*) using morphology and geographic data (see species discussions).

There is scutellar and antennal variation among species in this genus: the short, stout scutellar processes in *G. planiscutum* are horizontally oriented (pl. 15D) and the antenna 6-segmented in *G. pallidalata*. As previously mentioned, head shape is also variable among *Gibbosella* species, ranging from spherical or ovoid in most species to elongate and cylindrical in two previously described species.

This genus is very similar to *Synavecoris* by the small size, general dull coloration, ventral head depression restricted to the anteocular (apex of clypeus to anterior eye margin; pl. 13K) region, moderately separated scutellar processes, shallowly depressed MGE that does not extend dorsally in lateral view, basally fused M and Cu in the distal part of the hemelytron, and circular spiracles, but is distinguished by the characters mentioned in the diagnosis. Maldonado (1990) incorrectly listed 1953 as the year *Synavecoris* was described and indicated that the description was based on "nymphs, probably of *Ectrichodia*." Villiers (1968b) described *Synavecoris* based on one macropterous adult male (pl. 12) and two micropterous adult females; nymphs of *Synavecoris* were not described by Villiers. The small size of *Synavecoris*, relatively slender legs, pronotal structure, and wing venation patterns distinguish *Synavecoris* from *Ectrichodia* Lepeletier and Serville, 1825, and thus, we considered *Synavecoris* a valid genus.

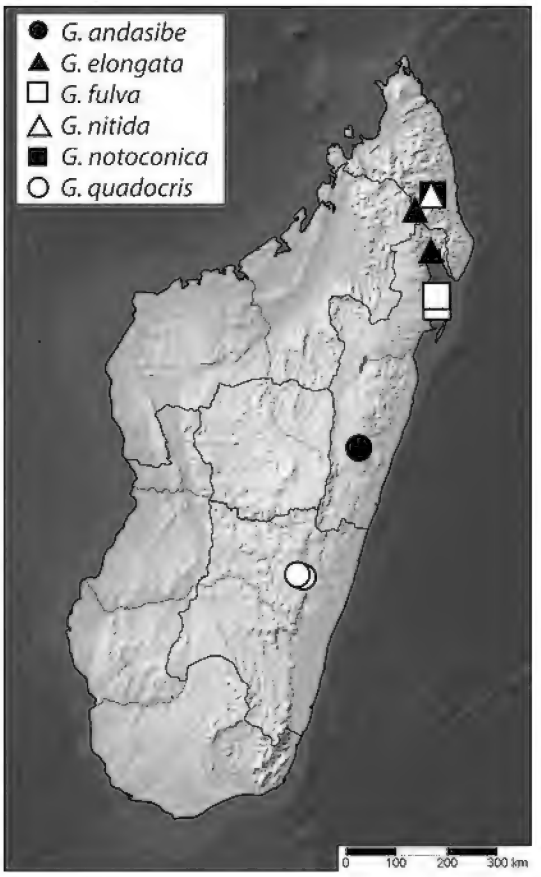
Identification Key to the Males of Species of *Gibbosella*

1. Scutellar processes slender, long and dorsally directed (pl. 15C) 2
– Scutellar processes short, stout, and horizontally directed (pl. 15D) .... *planiscutum*, new species

2. Head circular or ovoid in lateral view, not distinctly elongate and cylindrical..... 3
– Head very elongate, cylindrical in lateral view .....*elongata* Chłond
3. DFLA divided into four pseudosegments; antenna thus appearing 8-segmented 4
– DFLA divided into two pseudosegments; antenna thus appearing 6-segmented .... *pallidalata*, new species
4. Head as long as wide 5
– Head longer than wide 9
5. Head ovoid to subpentagonal; labial segment II longer than III; anterior pronotal lobe not laterally carinate..... 6
– Head nearly circular in lateral view (pl. 13C); labial segments II and III subequal in length; anterior pronotal lobe slightly carinate laterally .....*pallidacorium*, new species
6. Synthlipsis about two times width of eye... 7
– Synthlipsis less than two times width of eye. 8
7. Head subpentagonal; eye not reaching dorsal and ventral head surfaces; fossula spongiosa absent on mid tibia; body length <7 mm .. ..*nitida*, new species
– Head ovoid; eye almost reaching dorsal and ventral head surfaces; fossula spongiosa present on mid tibia; body length >7 mm . ..... *fulva*, new species
8. Synthlipsis about width of eye; fossula spongiosa absent on mid tibia..... .....*betampona*, new species
– Synthlipsis less than width of eye; fossula spongiosa present on mid tibia..... .....*mantella*, new species
9. Anteocular region shorter than postocular 10
– Anteocular region as long as postocular (pl. 13C)..... 11
10. Postclypeus not medially depressed (pl. 13A); synthlipsis width about 2.5 times width of eye; sternal intersegmental sutures carinulate between II–IV .... *andasibe*, new species
– Postclypeus medially depressed (pl. 13B); synthlipsis width about 3.5 times width of eye; sternal intersegmental sutures carinulate between II–VI. .*megafrons*, new species
11. Ventral margin of labial segment III convex (pl. 13C); anterior pronotal lobe not dorsally projecting (pl. 15D); mesosternum with medial and lateral depressions 12
– Ventral margin of labial segment III straight (pl. 13G–I, K); anterior pronotal lobe dorsally projecting above pronotal disc (pl. 15C); mesosternum with one large, shallow medial depression 14
12. Postclypeus distinctly depressed (pl. 13B); synthlipsis width 1.5 times width of eye; pronotal transverse suture complete, not divided by paramedian ridges; vestiture sparse..... 13
– Postclypeus not distinctly depressed (pl. 13A); synthlipsis width two times width of eye; pronotal transverse suture incomplete, divided by paramedian ridges (pl. 15B); vestiture dense..... *brunalvus*, new species
13. Labial segment II longer than III; abdominal sternites convex, keellike; median pygophore process spadelike in caudal view (pl. 19B) . .....*vangocris*, new species
– Labial segment II and III subequal in length; abdominal sternites with shallow medial longitudinal depression (pl. 18C); median pygophore process subquadrate in caudal view (pl. 19A)..... *quadocris*, new species
14. Synthlipsis width about 1.5 times width of eye; eye not reaching dorsal and ventral head surfaces; sternal intersegmental sutures carinulate between II and III and laterally between III–VI. ....*conisimilis*, new species
– Synthlipsis width about width of eye; eye reaching dorsal and ventral head surfaces; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI ..... *notoconica*, new species

Identification Key to the Females of Species of *Gibbosella*

1. Head elongate, cylindrical (pl. 12); anterior pronotal lobe strongly elevated dorsally in lateral view; body length >8 mm 2



MAP 2. Localities of *Gibbosella andasibe*, *G. elongata*, *G. fulva*, *G. nitida*, *G. notoconica* and *G. quadocris*.

– Head shorter, ovate (pl. 13F); anterior pronotal lobe slightly to moderately elevated dorsally in lateral view; body length <8 mm 3

2. Scutellar processes convergent; hind tibia with dark apical half . . . . . *mirabilis* Chłond

– Scutellar processes not convergent; hind tibia yellowish with dark annulus in basal part. . . . . *elongata* Chłond

3. Synthlipsis width three times width of eye; generally brown to dark brown with scutellar apical projections whitish to pale . . . . . *planiscutum*, new species

– Synthlipsis width two times width of eye; generally brown to dark brown with scutellar apical projections brown to dark brown . . . . . *brunalvus*, new species

***Gibbosella andasibe*, new species**

Plates 1, 5, 8; map 2

Diagnosis: Males recognized among other species in this genus by the very small body size, coloration, anteocular region shorter than the postocular, postclypeus not depressed, synthlipsis width about 2.5 times the width of an eye, and fossula spongiosa absent on mid tibia. This species is similar to *G. megafrons*, from which it differs by the light brown anterior pronotal lobe, brown posterolateral margin of pronotum, pale posterior half of scutellum, the flat postclypeus, smaller synthlipsis width, lack of a fossula spongiosa on the mid tibia, and intersegmental sutures carinulate between sternites II–IV.

Description: **MALE:** Body length: 3.64 mm (holotype). COLORATION: Dark brown with antennal segments VII and VIII, posterolateral margin of pronotum, pleura dorsad of coxae, spot on dorsoposterior margin of mesopleuron, posterior half of scutellum, corium basally, coxae, trochanters, femora basally, laterotergites, except posterior half of VII, and sternites medially and anterolaterally pale. Wing membrane, remainder of antenna, legs, and corium brown. Labium, neck dorsally, and anterior pronotal lobe light brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region shorter than postocular; gula flat, conforming to rounded shape of head (pl. 13C); postclypeus flat (pl. 13A); synthlipsis about 2.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel as long as scape; antenna 8-segmented; labium stout; labial segment III subequal to II, ventrally convex (pl. 13C). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections slightly dorsally directed (pl. 15C); meso- and metasterna

separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum slightly medially longitudinally depressed posteriorly; legs slender; fossula spongiosa absent on mid tibia; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex; distal part of R absent. Abdomen: Apex medially notched; sternites medially convex, intersegmental sutures carinulate between II–IV; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate.

Etymology: The species epithet is a noun in apposition and is named after the type locality, Andasibe National Park, Madagascar.

Distribution: The single known specimen was collected southeast of Andasibe National Park headquarters in the Toamasina province (map 2).

Holotype: Male: **Madagascar: Toamasina:** 7 km SE of Andasibe National Park headquarters, 18.96266°S 48.45266°E, 1050 m, 07 Jan 2001–22 Jan 2001, M. Irwin, R. Harin'Hala (00044816) (CAS).

***Gibbosella betampona*,** new species
Plates 1, 5, 8; map 3

Diagnosis: Males recognized among other species in *Gibbosella* by the circular head shape in lateral view that is as long as it is wide in dorsal view, large ocelli, eyes reaching dorsal and ventral head margin, labial segment II longer than III, mesosternum with large medial depression, absence of the fossula spongiosa on the mid tibia, and BPE shorter than the basal plate. This species is similar to *G. mantella*, but the pale posterior margin of the pronotum and lateral spots on the meso- and metasterna, the brown corium, larger synthlipsis width, meso- and metasterna not completely separated by a distinct suture, absence of the fossula spongiosa on the mid tibia, and shorter BPE relative to the basal plate distinguish this species from *G. mantella*.

MAP 3. Localities of *Gibbosella betampona*, *G. mantella*, *G. planiscutum*, and *G. vangocris*.

Description: **MALE:** Body length: 6.40 mm (holotype). COLORATION: Dark brown with pale labial segment IV, antennal segment V apically, antennal segments VI–VIII, lateral spots on meso- and metasterna, coxae, trochanters, forefemur basally, mid and hind femora basally and subapically, foretibia except medially, mid and hind tibiae, tarsi, anterior half of laterotergites, paramedian spots on sternites III–V, and lateral margin of sternite VII. Remainder of labium, corium, and basal wing veins brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13C); as long as wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to

rounded shape of head (pl. 13C); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on distinct median tubercle (pl. 13C); eye about half of head length, not reaching dorsal head surface, reaching ventral head surface; antenna inserted dorsally on head; pedicel about as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13C). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna not completely or weakly separated by distinct transverse suture (pl. 15E); mesosternum with large medial depression; metasternum slightly medially longitudinally depressed; forefemur slightly incrassate; fossula spongiosa absent on mid tibia; tarsomeres I and II combined shorter than III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). ABDOMEN: Apex medially notched; sternites flat, intersegmental sutures carinulate between II–IV and laterally between IV–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G); area of endosomal struts–DPS fusion ovate (pl. 21A).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the locality in which the two known specimens were collected, Reserve Betampona, Madagascar.

DISTRIBUTION: Betampona Reserve in the Toamasina province (map 3).

HOLOTYPE: Male: **Madagascar: Toamasina:** Reserve Betampona, Camp Vohitsivalana, 37.1 km 338 Toamasina, 17.88666°S 49.2025°E, 520 m, 01 Dec 2005–03 Dec 2005, Fisher et al. (00006143) (CAS).

PARATYPE: **Madagascar: Toamasina**: Reserve Betampona, Camp Vohitsivalana, 37.1 km 338 Toamasina, 17.88666°S 49.2025°E, 520 m, 01 Dec 2005–03 Dec 2005, Fisher et al., 1♂ (00007255) (CAS).

Gibbosella brunalvus, new species

Plates 1, 5, 8, 23A; map 1

DIAGNOSIS: Males are recognized among others in *Gibbosella* by a combination of the following characters: the coloration, dense vestiture, postclypeus not depressed, pronotal transverse suture divided by paramedian ridges, and scutellar processes dorsally directed. Females are recognized by the coloration and synthlipsis about two times the width of an eye. Males are very similar to *G. fulva*, from which *G. brunalvus* differs by the more abundant pale markings on the pronotum, scutellum, corium, and sternites, smaller body size, dense vestiture, head longer than wide, flat postclypeus, and divided pronotal transverse furrow, among several other features. Females are similar to *G. planiscutum* based on the features mention in the generic description, but are distinguished by the dark brown antennal segment VIII and scutellum, femora basally and tibiae apically and basally pale to light brown, and smaller synthlipsis width.

DESCRIPTION: **MALE:** Body length: 4.89 mm (holotype), 4.79–5.13 mm. COLORATION: Dark brown with pale color on posterolateral margin of pronotum, scutellar processes, basal half of corium, coxae ventrally, trochanters, femora and tibiae basally, tarsi, anterior half of laterotergites, and sternites anterolaterally pale. Antennal segment V apically and segments VI–VIII white. Dorsal head surface, except synthlipsis and ocellar tubercle, markings throughout anterior pronotal lobe, labium, and antenna brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin (pl. 13E, G–K); postclypeus flat (pl. 13A); synthlipsis about two times width of eye; interoc-

ular sulcus near hind margin of eye (pl. 13B); ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; forefemur incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined subequal to III; hemelytron reaching or surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). ABDOMEN: Apex rounded; sternites convex, shallowly depressed between paramedian ridges on sternites II–V, intersegmental sutures carinulate between II–IV and laterally between IV–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G), fused anterior to fusion with DPS; area of endosomal struts–DPS fusion circular. **FEMALE:** Body length: 4.54 mm. Similar to males, but differ in the following characters: COLORATION: Dark brown with pale to light brown scape, pedicel, antennal segments III–IV and basal half of V, labium, femora except basal, and tibiae except apical and basal parts. Remaining antennal segments, coxae, trochanters, femora basally, tibiae apically and basally, and tarsi whitish to pale brown. STRUCTURE: In addition to characters mentioned in the generic description: HEAD: Synthlipsis about two times width of eye. THORAX: Pronotal longitudinal furrow restricted to anterior lobe; lateral depressions on posterior pronotal lobe obsolete; forefemur with small ventral tubercles (pl. 16D). ABDOMEN: Intersegmental sutures carinulate between sternites II–VI; external genitalia as in plate 23A; bursa copulatrix membranous, with lateral lobes (pl. 23F); vermiform gland and lateral spermathecae damaged.

ETYMOLOGY: The species epithet is a noun in the nominative case and is named after the nearly uniform dark brown venter.

DISTRIBUTION: Tsingy de Bemaraha National Park in Mahajanga province (map 1).

DISCUSSION: The coloration is entirely dark brown on the head and anterior pronotal lobe, pale to brown medial stripes on the abdominal sternites in some male specimens. A female specimen was associated with males based on morphology and the same collection event as one other male.

HOLOTYPE: Male: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 3.4 km 93°**E** Bekopaka, Tombeau Vazimba, 19.14194°S 44.82805°E, 50 m, 06 Nov 2001–10 Nov 2001, Fisher et al. (00006317) (CAS).

PARATYPES: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 3.4 km 93°E Bekopaka, Tombeau Vazimba, 19.14194°S 44.82805°E, 50 m, 06 Nov 2001–10 Nov 2001, Fisher et al., 3♂ (00006122, 00006318, 00099043) (UCR), 3♂ (00006319, 00006321, 00099044) (SU), 5♂ (00006322–00006326) (CAS), 2♂ (00006327, 00006328) (BMNH), 2♂ (00006329, 00006455) (USNM). Parc National Tsingy de Bemaraha, 10.6 km ESE 123° Antsalova, 19.70944°S 44.71806°E, 150 m, 16 Nov 2001–20 Nov 2001, Fisher et al., 1♂ (00045686), 1♀ (00048066) (CAS). **Unknown:** 2♂ (00007154, 00044944) (CAS).

Gibbosella conisimilis, new species

Plates 1, 5, 8, 15C, 18A; map 1

DIAGNOSIS: Males are recognized among other species in *Gibbosella* by the larger body size, synthlipsis width 1.5 times the width of an eye, labial segment III ventrally straight, conically elevated anterior pronotal paramedian lobes in lateral view, anterior pronotal lobe without anterolateral protuberances, continuous pronotal transverse suture, and mesosternum with large medial depression. This species is similar to *G. notoconica*, but the slightly smaller body size,

pale apex of antennal segment V, dark brown pronotum (except anterior and posterolateral margins and disc) and mesosternum (except anterolaterally and posteriorly), larger synthlipsis width, interocular sulcus posterior to the hind margin of the eye, smaller ocelli, eye size relative to the head length and height, and intersegmental sutures carinulate between II and III and laterally between III–VI distinguish this species from *G. notoconica*. The conical anterior pronotal paramedian lobes are also not as distinct as in *G. notoconica*.

Description: **MALE:** Body length: 7.92 mm (holotype), 7.86–8.44 mm. COLORATION: Dark brown with pale dorsal head surface (except clypeal apex, mandibular plates, antennifers, anterior of interocular sulcus, interocular sulcus, and dorsal surface of ocellar tubercle), scape basally, antennal segment V apically, and segments VI–VIII, anterior and posterolateral margins of pronotum, pronotal disc, lateral longitudinal depressions of posterior pronotal lobe, stridulatory groove, mesosternum anterolaterally and posteriorly, metasternum, scutellum medially, corium basally, coxae, trochanters, femora basally and ventrally, mid and hind tibiae medially, tarsi, anterior margin of laterotergites, and sternites medially and anterolaterally. VESTITURE: Very sparse; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-third longer than scape; antenna 8-segmented; labium slender; labial segment III subequal to II, ventrally straight (pl. 13G, H, K). Thorax (pl. 15C): Anterior pronotal lobe slightly conical in lateral view, without distinct anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed; meso- and metasterna not completely or weakly separated by distinct transverse suture (pl. 15E); mesosternum with large medial depression; metasternum slightly medially longitudinally depressed; legs slender; fossula spongiosa on mid tibia; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen (pl. 18A): Apex medially notched or sinuate; sternites medially convex, intersegmental sutures carinulate between II and III and laterally between III–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS, ventrally obscured by semiextended endosoma; area of endosomal struts–DPS fusion ovate (pl. 21A).

Etymology: The species epithet is an adjective in the nominative case and is named for the similar pronotal appearance of the pronotum in *G. notoconica*.

Distribution: Marojejy Nature Reserve in Antsiranana province (map 1).

Discussion: Coloration is variable with the dark brown area around the ocellar tubercle and interocular sulcus variable in size. The anterior pronotal lobe may be dorsally pale, and the pronotal transverse sulcus entirely or nearly entirely pale.

Holotype: Male: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 26 Sep 2005–04 Oct 2005, M. Irwin, R. Harin'Hala (00044850) (CAS).

Paratypes: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 15 Dec 2004–20 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00007113) (CAS), 1♂ (00045329) (SU); 25 Dec 2004–30 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00007260) (UCR); 10 Jan 2005–15 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00045259) (CAS); 25 Feb 2005–04 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00007066) (CAS); 25 Mar

2005–04 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00045427) (CAS); 04 Apr 2005–16 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00007079, 00007083) (CAS), 2♂ (00007150, 00007199) (BMNH); 18 May 2005–30 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00044819) (CAS); 30 May 2005–11 Jun 2005, M. Irwin, R. Harin'Hala, 1♂ (00045317) (SU); 11 Jun 2005–28 Jun 2005, M. Irwin, R. Harin'Hala, 1♂ (00045495) (UCR); 14 Oct 2005–22 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00007054) (AMNH). R.N.I. de Marojejy, 8.0 km NW Manantenina, 14.43667°S 49.775°E, 450 m, 05 Oct 1996–13 Oct 1996, E. Quinter and T. Nguyen, 1♂ (00078363) (AMNH). **Unknown:** 1♂ (00007064) (CAS).

Gibbosella elongata Chłond, 2010

Plates 1, 5, 12; map 2

Gibbosella elongata Chłond, 2010, 2522: 64.

Revised Diagnosis: Males recognized among other species in this genus by the larger body size, synthlipsis width same as width of an eye, labial segment III ventrally convex, elevated anterior pronotal paramedian lobes in lateral view, anterior pronotal lobe with small anterolateral projections. Females are recognized by the cylindrical head, scape surpassing apex of the head, and very gibbous anterior pronotal lobe with small anterolateral projections. This species can be easily distinguished from *G. mirabilis* by the enlarged, elongated, and much more elevated anterior pronotal lobe and lack of a depression in the posterior part of anterior pronotal lobe.

Redescription: **MALE:** Body length: 9.90 mm. COLORATION: Dark brown with pale basal part of scape, coxa, trochanters, basal part of forefemur, basal and apical part of mid and hind femur, apical and middle part of mid tibiae, hind tibiae except small subapical ring, anterior part of laterotergites III–VII and middle part of abdominal tergites III–VII. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Elongate ovoid to cylindrical in lateral view; longer than wide in dorsal view; anteocular region longer than postocular; gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large sized, located on distinct median tubercle; eye about one-third of head length, reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel slightly longer than scape; labium stout; labial segment III shorter than II, ventrally convex. Thorax: Anterior pronotal lobe gibbous (pl. 5) with small anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe striated transversely; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); forefemur incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined same length as III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Sternites medially convex, intersegmental sutures carinulate between II–IV; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; area of endosomal struts–DPS subquadrate. **FEMALE:** Body length: 9.40 mm (holotype). Similar to males, but differ in the following characters: COLORATION: Shining, dark brown with pale labrum, DFLA, small spots on pronotum and thorax, coxae, trochanters, basal half of forefemur and two-thirds of mid and hind femora, as well as apical part of all femora, tibiae and anterior part of laterotergites. STRUCTURE: In addition to characters mentioned in the generic description: Head (damaged): Slightly convex gula. Thorax: Anterior pronotal lobe gibbous with small anterolateral projections (pl. 12); visible medial longitudinal sutures on both pronotal lobes; lateral depressions on posterior pronotal lobe striated transversely. Abdomen: Tergites laterally and laterotergites striated transversely; tergites posterior distinctly rounded, except tergite III; sternites with distinct visible fold near lateral margin; intersegmental sutures carinulate between sternites II–VII; valvifer I triangular with flat dorsal part and one long setae; valvula I small with long hairs placed on small fold visible

in middle part; valvula III elongate, convolute in apical part with distinct dome-shaped elevation.

DISTRIBUTION: The type specimen was collected in the Anjanaharibe-Sud Reserve, west of Andapa, which is located in the southern part of Antsiranana province (map 2). The only known male specimen was collected in Maroantsetra near the Toamasina-Antsiranana border, which is in close proximity to the type locality.

DISCUSSION: Chłond (2010a) recently described this species from a single female representative. An undetermined male specimen was observed to have morphological similarities to *G. elongata* and *G. mirabilis*: elongate, cylindrical head shape; dorsally protruding anterior pronotal lobe; dorsally oriented scutellar processes; and general dark brown to blackish and pale coloration. Although extreme sexual dimorphism exists in *Gibbosella*, we assign the male to *G. elongata* based on the small basal dark brown band on the hind tibia and broader pale bands on the dorsal laterotergites; in *G. mirabilis*, the hind tibia is dark brown on the apical one-third to one-half and the dorsal laterotergites have more narrow pale bands. Furthermore, the male was collected near the border of Toamasina and Antsiranana provinces, in close proximity to the type locality of *G. elongata*; *G. mirabilis* has been collected from the southwestern region of Toamasina, near the Antananarivo-Toamasina border.

HOLOTYPE: Female: **Madagascar: Antsiranana:** Andapa District, Anjanaharibe-Sud Reserve, 14.69889°S 49.45483°E, 1600 m, 1960, P. Soga (MNHN).

OTHER MATERIAL EXAMINED: **Madagascar: Toamasina:** Maroantsetra/Ambodivoangy, 15.43231°S 49.74013°E, 9 m, no date provided, 1♂ (MNHN).

***Gibbosella fulva*,** new species

Plates 1, 5; map 2

DIAGNOSIS: Males are recognized among other species in this genus by the shiny brown color of the body, the head about as long as wide in dorsal view, synthlipsis two times the width of an eye, medium sized ocelli, eyes almost reaching dorsal and ventral head margin, labial segment II longer than III, anterior pronotal lobe without anterolateral projections, mesosternum with large medial depression, and fossula spongiosa on the mid tibia. This species is similar to *G. brunalvus*, but can be distinguished by the dark brown pronotum, scutellum, and corium, larger body size, sparse vestiture, head about as long as wide, depressed postclypeus, and pronotal transverse furrow continuous, among several other features.

DESCRIPTION: **MALE:** Body length: 7.40 mm (holotype), 7.37–7.40 mm. COLORATION: Dark brown with labial segments III and IV, antennal segments V–VIII, and anterior part of laterotergites pale. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); about as long as wide in dorsal view; anteocular region as long as postocular (pl. 13E); gula flat, conforming to rounded shape of head (pl. 13E); postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli medium sized, located on shallow median tubercle (pl. 13I); eye about one-third of head length, almost reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13E). THORAX: Anterior pronotal lobe without anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections slightly dorsally directed (pl. 15C); ventrally obscured by card mount; forefemur incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined shorter than III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). ABDOMEN: Apex medially notched, sternites medially obscured by card mount, but intersegmental sutures carinulate at least laterally between II–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; area of

endosomal struts–DPS fusion basally narrow but distally wider and ovate.

Etymology: The species epithet is an adjective in the nominative case and is named after the shiny brown color of the body.

Distribution: Antanambe and Seranambe in the Mananara District of Toamasina (map 2).

Holotype: Male: **Madagascar: Toamasina:** Mananara-Nord District, Seranambe, 16.24683°S 49.83916°E, 16 m, Jul 1965, J. Vadon and A. Peyrieras (MNHN).

Paratype: **Madagascar: Toamasina:** Mananara-Nord District, Antanambe, 16.43333°S 49.85°E, 8 m, no date provided, J. Vadon and A. Peyrieras, 1♂ (MNHN).

Gibbosella mantella, new species

Plates 1, 5, 8, 13C; map 3

Diagnosis: Males recognized among other species in *Gibbosella* by the circular head shape in lateral view that is as long as it is wide in dorsal view, synthlipsis less than the width of an eye, large ocelli, eyes reaching dorsal and ventral head margin, labial segment II longer than III, mesosternum with large medial depression, fossula spongiosa on the mid tibia, and BPE as long as the basal plate. This species is similar to *G. betampona*, but the slightly darker pronotum, pale meso- and metasterna and corium, smaller synthlipsis width, meso- and metasterna separated by a distinct suture, presence of the fossula spongiosa on the mid tibia, and longer BPE relative to the basal plate distinguish this species from *G. betampona*.

Description: **MALE:** Body length: 5.42 mm (holotype). COLORATION: Dark brown with pale labial segment IV, apical half of antennal segment V, antennal segments VI–VIII, posterior margin of pronotum, stridulatory groove, meso- and metasterna, corium and basal wing veins, coxae, trochanters, femora basally, mid and hind tibiae medially, tarsi, laterotergites except posterior margin, and sternites medially and laterally. Remainder of antenna and labium, dorsal surface of pronotum, and legs brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head (pl. 13C): Ovoid in lateral view; as long as wide in dorsal view; anteocular region as long as postocular; gula flat, conforming to rounded shape of head; postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis less than width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on distinct median tubercle; eye about half of head length, reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex. Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with large medial depression; metasternum slightly medially longitudinally depressed; forefemur incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined shorter than III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Apex medially notched; sternites medially convex, intersegmental sutures carinulate between II–IV and laterally between IV–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G); area of endosomal struts–DPS fusion basally narrow but distally wider and ovate (pl. 21A).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Camp Mantella, Marojejy National Park, Madagascar.

Distribution: Marojejy Nature Reserve in Antsiranana province (map 3).

Holotype: Male: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 11 Feb 2005–18 Feb 2005, M. Irwin, R. Harin'Hala (00006458) (CAS).

PARATYPES: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 28 Apr 2005–07 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00006460) (CAS); 14 Oct 2005–22 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00007038) (UCR). R.N.I. de Marojejy, 10.0 km NW Manantenina, 14.43333°S 49.76167°E, 750 m, 15 Oct 1996–22 Oct 1996, E. Quinter and T. Nguyen, 1♂ (00078367) (AMNH).

Gibbosella megafrons, new species

Plates 1, 5, 8; map 1

DIAGNOSIS: Males recognized among other species in *Gibbosella* by the very small body size, coloration, anteocular region shorter than the postocular, postclypeus depressed, synthlipsis width about 3.5 times the width of an eye, and distal part of R absent. This species is similar to *G. andasibe*, from which it differs by the entirely dark brown pronotum and scutellum, depressed postclypeus, larger synthlipsis width, presence of a fossula spongiosa on the mid tibia, and intersegmental sutures carinulate between II–VI.

DESCRIPTION: **MALE:** Body length: 3.78 mm (holotype), 3.78–5.05 mm. COLORATION: Dark brown with pale antennal segments VI and VII, posterodorsal spot on mesopleuron, spots on pleura dorsad of coxae, corium basally, coxae, trochanters, femora basally, anterior half of laterotergites, sternites III–VI medially, and anterolateral margins of sternites pale. Antennal segments IV and V, labium, scutellar processes, remainder of corium, basal wing veins, and remainder of legs brown. Wing membrane light brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region shorter than postocular; gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 3.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel as long as scape; antenna 8-segmented; labium stout; labial segment III subequal to II, ventrally convex (pl. 13C). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); separation of meso- and metasterna obscured; mesosternum with medial and paramedial longitudinal depressions; metasternum slightly medially longitudinally depressed; forefemur slightly incrassate; presence of fossula spongiosa on mid tibia cannot be determined due to tibial apex obscured; tarsomeres I and II combined shorter than III; hemelytron surpassing abdominal apex; distal part of R absent. ABDOMEN: Apex medially notched; sternites medially convex, intersegmental sutures carinulate between II–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; basal plate and BPE damaged; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate.

ETYMOLOGY: The species epithet is a noun in the nominative case and is named for the very large synthlipsis width.

DISTRIBUTION: Ranomafana National Park and Midongy du Sud National Park in the Fianarantsoa province (map 1).

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1110 m, 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala (00007168) (CAS).

PARATYPE: **Madagascar: Fianarantsoa:** Sud-Est Midongy, Sud Mont Papango (sud-ouest Befotaka), 23.85000°S 46.98333°E, 1200 m, Mar 1959, Andria Robinson, 1♂ (MNHN).

Gibbosella mirabilis Chłond, 2010

Plate 12; map 1

Gibbosella mirabilis Chłond, 2010, 2522: 63.

DISTRIBUTION: The only known specimen was collected from "Périnet" (currently known as Andasibe-Mantadia National Park) in the Toamasina province (map 1).

Discussion: This species was recently described by Chłond (2010a) from a single female representative. No other female or male specimens have been examined, and, thus, this species is not redescribed. This species is very similar to *G. elongata,* but is distinguished by the more strongly dorsally elevated anterior pronotal lobe, convergent scutellar processes, and hind tibiae with dark coloration on the apical half.

Holotype: Female: **Madagascar: Toamasina:** Périnet (Andasibe), 18.82666°S 48.44778°E, 1119 m, Oct 1972, A. Peyrieras (MNHN).

***Gibbosella nitida*,** new species
Plates 1, 5; map 2

Diagnosis: Males are recognized among other species in this genus by the small body size, synthlipsis two times the width of an eye, eye one-fourth of head length, fossula spongiosa absent on the mid tibia, and corium with relatively large shiny granulations not covered by setae, as well as small granulations with very short, erected, flattened setae. This species is similar to *G. megafrons*, but is distinguished by the smaller body size, more subpentagonal head that is as long as it is wide, anteocular length subequal to postocular, smaller synthlipsis width, longer labial segment II relative to III, and appearance of the corium.

Description: **MALE:** Body length: 4.75 mm (holotype). COLORATION: Dark brown with labial segment III and IV brown. Labial segment II apically and III basally, basal two-thirds of scape, coxae, trochanters, femora ventrally, and sternites II–VI medially and laterally pale. Corium with shiny areas due to relatively large shiny granulations not covered by setae, as well as dull areas due to very small granulations with very short, erect, flattened setae. VESTITURE: Dense; corium with shorter, flattened setae; other features as in generic description. Hemelytra covered by very dense, small granulations with very short and flattened setae, as well as sparse relatively large granulations without setae. STRUCTURE: Head: Ovate, almost pentagonal in lateral view; about as long as wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula slightly swollen ventrolaterally, not distinctly produced beyond ventral head margin (pl. 13F–K); postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel slightly longer than scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13C). Thorax: Anterior pronotal lobe without anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); ventrally obscured by card mount; forefemur incrassate; fossula spongiosa absent on mid tibia; tarsomeres I and II combined shorter than III; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; sternites medially obscured by card mount, but intersegmental sutures carinulate at least laterally between II–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; area of endosomal struts–DPS fusion basally narrow but distally wider and ovate subquadrate.

Etymology: The species epithet is an adjective in the nominative case and is named for the shiny hemelytra.

Distribution: The only known specimen was collected in the Marojejy Nature Reserve in that Antsiranana province (map 2).

Holotype: Male: **Madagascar: Antsiranana:** Sambava District, Marojejy, Ambinanitelo, 14.44133°S 49.73908°E, 500 m, Dec 1958, Raharizonina (MNHN).

***Gibbosella notoconica*,** new species
Plates 1, 5, 8, 20A, 21A; map 2

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the larger body size, synthlipsis

as wide as an eye, large ocelli, eyes reaching the dorsal and ventral head margins in lateral view, labial segment III ventrally straight, conically elevated anterior pronotal paramedian lobes in lateral view, anterior pronotal lobe without anterolateral protuberances, continuous pronotal transverse suture, and mesosternum with large medial depression. This species is similar to *G. conisimilis*, but the slightly larger body size, pale antennal segment V, dark brown pronotum with pale lateral spots extending from posterior half of anterior lobe to anterior half of posterior lobe, pale meso- and metasterna, smaller synthlipsis width, interocular sulcus near the hind margin of the eye, larger ocelli, eye size relative to the head length and height, the more distinctive conical anterior pronotal paramedian lobes with a dorsal protuberance, and intersegmental sutures carinulate between II–IV and laterally between IV–VI distinguish this species from *G. conisimilis*.

Description: **MALE:** Body length: 9.48 mm (holotype), 8.53–9.48 mm. COLORATION: Dark brown with pale synthlipsis laterally, postocular dorsally except ocellar tubercle, neck dorsally, scape basally, antennal segments V–VIII, anterior and posterolateral margins of pronotum, lateral spots extending from posterior half of anterior pronotal lobe to anterior half of posterior lobe, stridulatory groove, meso- and metasterna, coxae, trochanters, forefemur basally and ventrally, mid and hind femora basally and subapically, tibiae medially, anterior area of laterotergites, lateral margins of sternites, and sternites medially. Labium and remainder of antenna brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on distinct median tubercle (pl. 13C); eye about half of head length, reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-fourth longer than scape; antenna 8-segmented; labium slender; labial segment III subequal to II, ventrally straight (pl. 13G–I, K). Thorax: Anterior pronotal lobe conical in lateral view (pl. 15C), without distinct anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe transversely striated; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with large medial depression; metasternum slightly medially longitudinally depressed; legs slender; fossula spongiosa on mid tibia; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Apex medially notched or sinuate; sternites medially convex, intersegmental sutures carinulate between II–IV and laterally between IV–VI; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G); area of endosomal struts–DPS fusion ovate (pl. 21A).

Etymology: The species epithet is an adjective in the nominative case and is named for the conical anterior pronotal paramedian lobes.

Distribution: Marojejy Nature Reserve in Antsiranana province (map 2).

Discussion: The coloration is slightly variable with the postclypeus entirely dark brown, the pronotum less pale, and the brown ventrolateral longitudinal band on the sternites varying in size in some specimens.

Holotype: Male: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 30 May 2005–11 Jun 2005, M. Irwin, R. Harin'Hala (00045367) (CAS).

Paratypes: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 25 Dec 2004–30 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00007240)

(CAS); 18 Feb 2005–25 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045655) (CAS); 11 Mar 2005–18 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00044813) (SU); 28 Apr 2005–07 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00007174) (UCR); 14 Oct 2005–22 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00045558) (UCR). **Unknown:** 1♂ (00006144) (CAS).

Gibbosella pallidacorium, new species

Plates 1, 5, 8; map 1

Diagnosis: Males are recognized among other species of *Gibbosella* by a combination of the following characters: the coloration, circular head shape in lateral view that is as long as it is wide in dorsal view, large ocelli, anterior pronotal lobe laterally carinate, meso- and metasterna not completely separated by a distinct suture, and intersegmental sutures carinulate between II–IV and laterally between IV and V. This species is similar to *G. betampona*, but differs by the pale postocular and neck, pale markings on the pronotum, pale corium, pale ventral abdominal surface with dark brown longitudinal stripe laterally, circular head shape, relatively deeper postclypeal depression, eye not reaching ventral head margin, labial segment II and III subequal, anterior pronotal lobe laterally carinate, mesosternum with three longitudinal depressions, fossula spongiosa on the mid tibia, and intersegmental sutures carinulate between II–IV and laterally between IV and V.

Description: **MALE:** Body length: 5.78 mm (holotype). COLORATION: Dark brown with pale postocular and neck dorsally, scape basally, apical half of antennal segment V and segments VI and VII, labial segment IV, anterior pronotal lobe anteromedially, pronotal disc, posterior pronotal lobe anterolaterally and posterolateral margin, stridulatory groove, meso- and metasterna, corium except apical margin, basal wing veins, coxae, trochanters, mid and hind femora basally and medially (forelegs missing), mid tibia medially and apically, hind tibia except basally, dorsal laterotergites except posterior margin, ventral laterotergites, and sternites except pygophore and laterally. Labial segment III and wing membrane brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Circular in lateral view (pl. 13C); as long as wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on shallow median tubercle (pl. 13I); eye about half of head length, nearly reaching dorsal and ventral head surface; antenna inserted dorsally on head; pedicel about one-fourth longer than scape; antenna 8-segmented; labium slender; labial segment III subequal to II, ventrally convex (pl. 13C). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B), slightly carinate laterally; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe transversely striated; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna not completely separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum slightly medially longitudinally depressed; forelegs missing, mid and hind legs slender; fossula spongiosa on mid tibia; tarsi missing; hemelytron surpassing abdominal apex; distal part of R absent. Abdomen: Apex sinuate; sternites medially convex, intersegmental sutures carinulate between II–IV and laterally between IV and V; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS, posteriorly obscured by semiextended endosoma; area of endosomal struts–DPS fusion circular.

Etymology: The species epithet is a noun in the nominative case and is named for the pale corium.

Distribution: The only known specimen was collected in Marojejy Nature Reserve in Antsiranana province (map 1).

Holotype: Male: **Madagascar: Antsiranana:** R.N.I. de Marojejy, 11.0 km NW Manantenina, 14.43667°S 49.74167°E, 1225 m, 25 Oct 1996–03 Nov 1996, Eric L. Quinter (00078364) (AMNH).

***Gibbosella pallidalata*, new species**

Plates 1, 5, 8; map 1

DIAGNOSIS: Males recognized among other species in *Gibbosella* by the coloration, 6-segmented antenna, anterior pronotal lobe without distinct anterolateral protuberances, and fossula spongiosa absent on the mid tibia. This species is similar to *G. planiscutum*, but, in addition to the diagnostic features, it differs by the continuous pronotal transverse suture, separation of the meso- and metasterna, and intersegmental sutures carinulate between II–VI.

DESCRIPTION: **MALE:** Body length: 5.23 mm (holotype), 4.88–5.34 mm. COLORATION: Pale with dark brown head, propleuron medially, mesopleuron and metapleuron except dorsad of coxae, thoracic sterna, sternites ventrolaterally, and pygophore medially. Antenna, labium, posterior pronotal lobe medially, scutellum, distal half of corium, legs except femora basally and ventrally and mid and hind tibiae medially, and posterior half of laterotergites II–VI brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin (pl. 13F–K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about as long as scape; antenna 6-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13C). THORAX: Anterior pronotal lobe without distinct anterolateral projections; pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum slightly medially longitudinally depressed; forefemur slightly incrassate; fossula spongiosa absent on mid tibia; tarsomeres I and II combined subequal to III on forelegs, longer on mid and hind legs; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). ABDOMEN: Apex rounded or sinuate; sternites medially convex, intersegmental sutures carinulate between II–VI; pygophore process flattened in lateral view (pl. 20F), subtriangular in caudal view (pl. 19G, I), apex rounded; BPE shorter than basal plate; endosomal struts not reaching posterior margin of DPS, posteriorly obscured by semiextended endosoma; area of endosomal struts–DPS fusion elongate subquadrate.

ETYMOLOGY: The species epithet is a noun in the nominative case and is named for the pale wing membrane.

DISTRIBUTION: Fianarantsoa and Toliara provinces (map 1).

DISCUSSION: Some specimens have small paramedian brown spots on the anterior pronotal lobe.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 14 Apr 2002–23 Apr 2002, M. Irwin, R. Harin'Hala (00044983) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 16 Oct 2001–08 Nov 2001, M. Irwin, R. Harin'Hala, 2♂ (00007237, 00007245) (CAS); 08 Nov 2001–15 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00007159) (SU); 22 Nov 2001–28 Nov 2001, M. Irwin, R. Harin'Hala, 2♂ (00045117, 00045624) (BMNH); 04 Feb 2002–12 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007206) (CAS); 26 Feb 2002–04 Mar 2002, M. Irwin, R. Harin'Hala, 1♂ (00007130) (AMNH); 31 Mar 2002–07 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00045535, 00045541) (USNM); 07 Apr 2002–14 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00044918) (CAS); 14 Apr 2002–23 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00007074, 00044825) (MNHN), 2♂ (00044914, 00045473) (BMNH); 28 Apr 2002–05 May 2002, M. Irwin, R. Harin'Hala, 2♂ (00005356, 00007215) (SU); 05 May 2002–13 May 2002, M. Irwin, R. Harin'Hala, 1♂

(00007232) (CAS); 04 Jul 2002–14 Jul 2002, M. Irwin, R. Harin'Hala, 3♂ (00007205, 00007222, 00007243) (CAS); 14 Jul 2002–24 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00007246) (UCR). Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1110 m, 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00044934) (CAS), 1♂ (00045471) (MNHN); 15 Dec 2001–21 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00099046) (CAS); 28 Jan 2002–04 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00044827) (SU); 04 Feb 2002–12 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007235) (CAS); 06 May 2002–15 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00007194) (CAS); 04 Jun 2002–14 Jun 2002, M. Irwin, R. Harin'Hala, 2♂ (00007262, 00007267) (USNM); 15 Jul 2002–25 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00045533) (UCR). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00045580) (CAS); 31 Mar 2002–09 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00007132) (CAS); 09 Apr 2002–16 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00007228) (AMNH); 15 Jul 2002–25 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00005358) (USNM); 07 Sep 2003–18 Sep 2003, M. Irwin, R. Harin'Hala, 2♂ (00007108, 00044902) (CAS) ; 21 Mar 2004–02 Apr 2004, M. Irwin, R. Harin'Hala, 1♂ (00007036) (SU); 18 Mar 2006–30 Mar 2006, M. Irwin, R. Harin'Hala, 1♂ (00007145) (CAS); 17 Oct 2006–01 Nov 2006, M. Irwin, R. Harin'Hala, 1♂ (00045653) (UCR). Ranomafana JIRAMA water works, 21.2485°S 47.45216°E, 690 m, 22 Nov 2001–28 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00007210) (CAS), 1♂ (00007227) (UCR). Ranomafana National Park, Talatakely, 21.25°S 47.41667°E, 900 m, 09 Jan 2001–19 Jan 2001, D.H. and K.M. Kavanaugh, R.L. Brett, E. Elsom, and F. Vargas, 2♂ (00007110, 00044853) (CAS), 2♂ (00044979, 00044996) (AMNH). **Toliara:** Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 29 Aug 2004–08 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044876) (CAS). Parc National d'Andohahela, Col du Sedro, 3.8 km 113° ESE Mahamavo, 37.6 km 341° NNW Tolagnaro, 24.76388°S 46.75166°E, 900 m, 21 Jan 2002–25 Jan 2002, Fisher et al., 1♂ (00006463) (UCR), 1♂ (00007085) (CAS), 1♂ (00007247) (MNHN). **Unknown:** 6♂ (00007076, 00007125, 00007204, 00007216, 00007249, 00007264) (CAS).

***Gibbosella planiscutum*, new species**

Plates 1, 5, 8, 17A, 23B; map 3

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the coloration, dense vestiture, pronotal transverse suture divided by paramedian ridges, scutellar processes horizontally directed, meso- and metasterna not entirely separated by a distinct suture, and intersegmental sutures carinulate between II–VI and laterally between VI and VII. Females are recognized by the coloration and synthlipsis about three times the width of an eye. Males are similar to *G. brunalvus*, from which it differs by the pale markings on the head (e.g., mandibular and maxillary plates, antennifers, ventral and lateral anteocular and postocular surface), pale pronotum with dark brown paramedian spots on the anterior lobe and margins of posterior lobe, depressed postclypeus, orientation of the scutellar processes, lack of a distinct separation between the meso- and metasterna, and intersegmental sutures carinulate between II–VI and laterally between VI and VII. Females are very similar to *G. brunalvus*, but are distinguished by the nearly black body, pale apex of antennal segment VIII and apex of scutellum, and larger synthlipsis width.

Description: **MALE:** Body length: 5.08 mm (holotype), 4.91–5.90 mm. COLORATION: Dark brown with pale mandibular and maxillary plates, antennifers, ventral and lateral anteocular and postocular surface, except at posterior margin, scape basally, antennal segments VI–VIII, anterior pronotal lobe except paramedian spots and pronotal longitudinal furrow, posterior pronotal lobe except medially, anterior propleural lobe except medially, posterior propleural lobe dorsally, mesopleuron and metapleuron dorsad of coxae, apical half of scutellum, basal half of corium, coxae, trochanters, forefemur basally and ventrally, mid and hind femora basally, tibiae basally, anterior half of laterotergites, and sternites medially and anterolaterally. Remainder of antenna, labium, remainder of legs, apical half of corium, and basal wing veins brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl.

13C); gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin (pl. 13F–K); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13C). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions on posterior pronotal lobe transversely striated; scutellar apical projections horizontally directed (pl. 15D); meso- and metasterna not completely separated by distinct transverse suture (pl. 15E); mesosternum with medial and paramedial longitudinal depressions; metasternum slightly medially longitudinally depressed; fore- and mid femora incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined shorter than III; hemelytron reaching or surpassing abdominal apex; distal part of R vein present but not forming R+M cell (pl. 17B, C). ABDOMEN: Apex rounded; sternites with shallow medial depression (pl. 18C), intersegmental sutures carinulate between II–VI and laterally between VI and VII; pygophore process subtriangular in lateral (pl. 20A) and caudal (pl. 19G, I) views, apex rounded; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G), fused anterior to fusion with DPS; area of endosomal struts–DPS fusion ovate (pl. 21A). **FEMALE:** Body length: 4.78–5.06 mm. Similar to males, but differ in the following characters: COLORATION: Dark brown with brown scape, pedicel, antennal segments III–IV, base of segment V, apex of segment VIII, labium, and legs except trochanter and tarsi. Remainder of antennal segments, scutellar processes, trochanters, and tarsi whitish to pale brown. STRUCTURE: In addition to characters mentioned in the generic description: HEAD: Synthlipsis about three times width of eye. THORAX: Pronotal longitudinal furrow restricted to anterior lobe; lateral depressions on posterior pronotal lobe obsolete; forefemur with small ventral tubercles (pl. 16D). ABDOMEN: Intersegmental sutures carinulate between sternites II–VI; external genitalia as in plate 23B; bursa copulatrix membranous, with lateral lobes (pl. 23F); vermiform gland elongate, much longer than bursa copulatrix; lateral spermathecae inserted on median oviduct with slender, fragile duct and large ovoid pouch.

ETYMOLOGY: The species epithet is a noun in the nominative case and is named for the horizontally oriented scutellar apices.

DISTRIBUTION: Antananarivo and Mahajanga provinces (map 3).

DISCUSSION: In some specimens, the entire postocular is dark brown, the brown spots on the paramedian anterior pronotal lobes are absent, and the scutellum is entirely pale. Females were associated to males based on morphology and the same collection event as another male.

HOLOTYPE: Male: **Madagascar: Mahajanga:** Analamanitra Forest, 14 km NE of Misinjo, 16.13333°S 45.7°E, 20 m, 20 Nov 2007–04 Dec 2007, M. Irwin, R. Harin'Hala (00044849) (CAS).

PARATYPES: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 10 Jan 2004–20 Jan 2004, M. Irwin, R. Harin'Hala, 1♂ (00006461) (CAS), 1♂ (00007266) (SU); 20 Jan 2004–01 Feb 2004, M. Irwin, R. Harin'Hala, 1♂ (00007058) (UCR). **Mahajanga:** 160 km N of Maevatanana on RN 04, Ampijoroa National Park, 16.31933°S 46.81333°E, 43 m, 07 Feb 2005–19 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045216) (USNM). Namoroka, 53 km from Soalala, 3 km N Vilanandro Village, 16.47333°S 45.39133°E, 122 m, 30 Nov 2007–09 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00045296) (USNM). Parc National de Namoroka, 16.9 km 317° NW Vilanandro, 16.40666°S 45.31°E, 100 m, 12 Nov 2002–16 Nov 2002, Fisher et al., 1♂ (00006320), 1♀ (00045373) (CAS), 1♀ (00045711) (UCR). Parc National de Namoroka, 17.8 km 329° WNW Vilanandro, 16.37666°S 45.32666°E, 100 m, 08 Nov 2002–12 Nov 2002, Fisher et al., 1♂ (00007209) (CAS). Réserve forestière Beanka, 50.2 km E Maintirano, 18.02638°S 44.05055°E, 250 m, 19 Oct 2009–26 Oct

2009, B.L. Fisher et al., 1♂ (00006464) (CAS). Réserve Spéciale de Bemarivo, 23.8 km 223° SW Besalampy, 16.925°S 44.36833°E, 30 m, 19 Nov 2002–23 Nov 2002, Fisher et al., 1♂ (00045515) (SU). **Unknown:** 1♂ (00007149) (CAS).

Gibbosella quadocris, new species

Plates 1, 5, 8, 19A, 20B; map 2

Diagnosis: Males are recognized among other species in *Gibbosella* by the small body size, ovoid head shape in lateral view that is longer than it is wide in dorsal view, synthlipsis 1.5 times the width of an eye, labial segments II and III subequal, subquadrate median pygophore process with truncated apex in caudal view, and BPE as long as the basal plate. This species is very similar to *G. vangocris*, but is distinguished by the smaller body size, slightly shorter head, more narrowly depressed postclypeus, relative lengths of the labial segments, meso- and metasterna not distinctly or weakly separated by a distinct transverse suture, and shape of the pygophore process in caudal view.

Description: **MALE:** Body length: 5.39 mm (holotype), 5.33–5.78 mm. COLORATION: Dark brown with pale interocular sulcus, anterior pronotal lobe except interspersed brown markings posterolateral margin of pronotum, metasternum, corium basally, coxae, trochanters, femora basally and ventrally, mid and hind tibiae basally, laterotergites except posterior margin, and sternites (except medial pygophore and lateral and posterolateral margins of sternites II–VI). Antennal segment V (except basally) and VI–VIII white. Remainder of antenna, labium, parts of anterior pronotal lobe, posterior pronotal lobe, and rest of corium and basal wing veins brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about as long as scape; antenna 8-segmented; labium stout; labial segment III subequal to II, ventrally convex (pl. 13C). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna not completely or weakly separated by distinct transverse suture (pl. 15E); mesosternum with medial and paramedial depressions; metasternum slightly medially longitudinally depressed; forefemur incrassate; fossula spongiosa on mid tibia; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Apex rounded or sinuate; sternites longitudinally depressed medially (pl. 18C), intersegmental sutures carinulate between II–VI; pygophore (pls. 19A, 20B) process subtriangular in lateral view, subquadrate in caudal view, apex truncated; BPE as long as basal plate; endosomal struts not reaching posterior margin, posteriorly obscured by semiextended endosoma; fused anterior to fusion with DPS; area of endosomal struts–DPS fusion elongate ovoid.

Etymology: The species epithet is a noun in apposition and is named for the subquadrate median pygophore process.

Distribution: Ranomafana National Park, Fianarantsoa province (map 2).

Discussion: In some specimens, the posterior pronotal lobe is dark brown, the anterior pronotal lobe has reduced pale coloration and appears almost uniformly brown, and the corium and basal wing veins range from pale to brown.

Holotype: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 08 Nov 2001–15 Nov 2001, M. Irwin, R. Harin'Hala (00007072) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 08 Nov 2001–15 Nov 2001, M. Irwin, R. Harin'Hala, 2♂ (00006457, 00007128) (CAS), 1♂ (00007258) (UCR); 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007200) (SU); 02 Jan 2002–10 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00007153) (CAS); 10 Jan 2002–14 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00007172) (CAS); 12 Feb 2002–19 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007236) (CAS); 31 Mar 2002–07 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00045552) (CAS); 07 Apr 2002–14 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00044888, 00045425) (AMNH); 14 Apr 2002–23 Apr 2002, M. Irwin, R. Harin'Hala, 3♂ (00044909, 00044949, 00044951) (USNM), 2♂ (00044954, 00045166) (MNHN); 28 Apr 2002–05 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00007184) (CAS); 05 May 2002–13 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00007186) (CAS); 13 Jun 2002–23 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00044802) (CAS); 04 Jul 2002–14 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00044895) (CAS); 24 Jul 2002–04 Aug 2002, M. Irwin, R. Harin'Hala, 1♂ (00007219) (BMNH). Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1100 m, 02 Jan 2002–10 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00007188) (CAS); 19 Feb 2002–26 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007257) (SU); 04 Jun 2002–14 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00044860) (UCR). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 14 Jan 2002–21 Jan 2002, M. Irwin, R. Harin'Hala, 2♂ (00044882, 00045572) (BMNH); 21 Jan 2002–28 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00045651) (SU). Parc National Ranomafana, radio tower at forest edge, 21.25083°S 47.40716°E, 1130 m, 18 Mar 2006–30 Mar 2006, M. Irwin, R. Harin'Hala, 1♂ (00007224) (CAS). Ranomafana JIRAMA water works, 21.2485°S 47.45216°E, 690 m, 06 Dec 2001–15 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007166) (CAS), 1♂ (00007203) (AMNH); 21 Dec 2001–24 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00006465) (UCR); 21 Jan 2002–28 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00045348) (CAS). **Unknown:** 4♂ (00007117, 00007180, 00007181, 00007261) (CAS).

Gibbosella vangocris, new species

Plates 1, 5, 8, 19B, 20C, 21B, 22A; map 3

DIAGNOSIS: Males recognized among other *Gibbosella* species by the relatively larger body size, slightly broader postclypeal depression, synthlipsis 1.5 times the width of an eye, labial segment III shorter than II, intersegmental sutures carinulate between II–VI, and spadelike median pygophore process in caudal view. This species is very similar to *G. quadocris*, but is distinguished from *G. quadocris* by the larger body size, slightly more elongate head, more broadly depressed postclypeus, labial segment II longer than III, meso- and metasterna distinctly separated by a distinct transverse suture, and shape of the pygophore process in caudal view.

DESCRIPTION: **MALE:** Body length: 7.17 mm (holotype), 6.80–7.61 mm. COLORATION: Dark brown with antennal segment V apically; antennal segments VI–VIII; posterior margin of pronotum; corium basally; coxae; trochanters; basal half of femora; anterior areas of laterotergites; sternites medially, except pygophore; and anterolaterally on sternites II–VI pale. Remainder of corium and basal wing veins brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; anteocular region as long as postocular (pl. 13C); gula flat, conforming to rounded shape of head (pl. 13C); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small, located on shallow median tubercle (pl. 13I); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about as long as scape; antenna 8-segmented; labium stout; labial segment III shorter than II, ventrally convex (pl. 13C). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe smooth; scutellar apical projections dorsally directed (pl. 15C); meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; legs slender; fossula spongiosa on mid tibia; tarsomeres I and II combined subequal to III; hemelytron sur-

passing abdominal apex; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Apex rounded; sternites medially convex, with shallow medial depression on posterior half of segment VI, intersegmental sutures carinulate between II–VI; pygophore (pls. 19B, 20C) process subtriangular basally and apically flattened and curved in lateral view, spadelike in caudal view, apex rounded; BPE as long as basal plate (pl. 22A); endosomal struts reaching posterior margin of DPS, with posterior ventral process (pl. 22G), fused anterior to fusion with DPS; area of endosomal struts–DPS fusion ovate (pl. 21B).

Etymology: The species epithet is a noun in apposition and is named for the spadelike median pygophore process.

Distribution: Marojejy National Park in the Antsiranana province, Ranomafana National Park in the Fianarantsoa province, and Berenty Special Reserve in the Toliara province (map 3).

Discussion: The coloration is slightly variable with the posterior pronotal lobe, corium, and basal wing veins ranging from pale to brown.

Holotype: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 16 Oct 2001–08 Nov 2001, M. Irwin, R. Harin'Hala (00006995) (CAS).

Paratypes: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 25 Feb 2005–04 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00007275) (CAS). **Fianarantsoa:** Parc National Ranomafana, Bevaohazo-Ranomana, 21.2°S 47.48333°E, 970 m, Nov 2000, M. Irwin, R. Harin'Hala, 1♂ (00044919) (CAS). Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 16 Oct 2001–08 Nov 2001, M. Irwin, R. Harin'Hala, 3♂ (00006984, 00007000, 00007001) (USNM), 13♂ (00007005, 00007014, 00007022, 00007029, 00007030, 00007033, 00007055, 00007057, 00007063, 00007070, 00007071, 00007077, 00007092) (CAS), 4♂ (00007111, 00007114, 00007126, 00007254) (MNHN), 3♂ (00007268, 00007270, 00048227) (AMNH); 08 Nov 2001–15 Nov 2001, M. Irwin, R. Harin'Hala, 3♂ (00006085, 00007006, 00007017) (MNHN), 4♂ (00007018, 00007044, 00007144, 00007274) (BMNH); 15 Nov 2001–22 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00045570) (UCR); 22 Nov 2001–28 Nov 2001, M. Irwin, R. Harin'Hala, 6♂ (00048028–00048033) (CAS); 15 Dec 2001–21 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00045586) (SU); 24 Dec 2001–02 Jan 2002, M. Irwin, R. Harin'Hala, 3♂ (00007093, 00044929, 00045720) (USNM); 19 Feb 2002–26 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007016) (UCR); 31 Mar 2002–07 Apr 2002, M. Irwin, R. Harin'Hala, 5♂ (00048052–00048056) (CAS); 07 Apr 2002–14 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00048034) (SU), 6♂ (00048036–00048041) (CAS); 14 Apr 2002–23 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00045342) (CAS); 05 May 2002–13 May 2002, M. Irwin, R. Harin'Hala, 2♂ (00006985, 00007013) (AMNH); 13 May 2002–23 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00007027) (CAS); 13 Jun 2002–23 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00045716) (CAS); 04 Jul 2002–14 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00007273) (BMNH); 14 Jul 2002–24 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00045172) (BMNH); 24 Jul 2002–04 Aug 2002, M. Irwin, R. Harin'Hala, 2♂ (00007032, 00007280) (USNM) ; 15 May 2003–28 May 2003, M. Irwin, R. Harin'Hala, 1♂ (00006993) (UCR). Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1100 m, 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala, 4♂ (00044845, 00044870, 00045020, 00045230) (BMNH), 3♂ (00045406, 00045409, 00045676) (CAS), 1♂ (00045688) (UCR); 02 Jan 2002–10 Jan 2002, M. Irwin, R. Harin'Hala, 2♂ (00006999, 00007023) (AMNH); 28 Jan 2002–04 Feb 2002, M. Irwin, R. Harin'Hala, 4♂ (00048042–00048045) (MNHN), 6♂ (00048046–00048051) (CAS); 19 Mar 2002–26 Mar 2002, M. Irwin, R. Harin'Hala, 2♂ (00045199, 00045384) (SU); 26 Mar 2002–31 Mar 2002, M. Irwin, R. Harin'Hala, 1♂ (00007040) (CAS); 08 Apr 2002–15 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00007042, 00007097) (CAS); 22 Apr 2002–29 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00007272, 00007278) (CAS); 06 May 2002–15 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00007015) (UCR); 04 Jun 2002–14 Jun 2002, M. Irwin, R. Harin'Hala, 2♂ (00007116, 00007119) (USNM); 15 Jul 2002–25 Jul 2002, M. Irwin, R. Harin'Hala, 2♂ (00045313, 00045578) (AMNH). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 06 Dec 2001–15 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007011) (MNHN), 1♂ (00007213) (CAS); 15 Dec 2001–21 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00045588) (UCR); 21 Dec 2001–24 Dec 2001, M. Irwin, R. Harin'Hala, 2♂ (00007019, 00045037) (SU); 14 Jan 2002–21 Jan 2002, M. Irwin, R. Harin'Hala, 2♂ (00045516, 00045554) (AMNH); 19 Feb 2002–26 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007008) (CAS); 12 Mar 2002–19 Mar 2002, M. Irwin, R. Harin'Hala, 1♂ (00006994) (CAS); 23 Apr 2002–30 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00007187) (SU); 14 Jun

2002–24 Jun 2002, M. Irwin, R. Harin'Hala, 2♂ (00006997, 00007007) (BMNH); 24 Jun 2002–05 Jul 2002, M. Irwin, R. Harin'Hala, 1♂ (00007105) (UCR); 15 Jul 2002–25 Jul 2002, M. Irwin, R. Harin'Hala, 2♂ (00007004, 00007025) (USNM); 18 Feb 2003–27 Feb 2003, M. Irwin, R. Harin'Hala, 1♂ (00045078) (AMNH); 20 Mar 2003–03 Apr 2003, M. Irwin, R. Harin'Hala, 1♂ (00007121) (SU); 06 Jul 2003–17 Jul 2003, M. Irwin, R. Harin'Hala, 1♂ (00007269) (CAS); 27 Aug 2003–07 Sep 2003, M. Irwin, R. Harin'Hala, 1♂ (00007021) (UCR); 28 Sep 2003–08 Oct 2003, M. Irwin, R. Harin'Hala, 2♂ (00007002, 00007233) (CAS); 02 Apr 2004–15 Apr 2004, M. Irwin, R. Harin'Hala, 1♂ (00007003) (USNM); 11 Jun 2004–24 Jun 2004, M. Irwin, R. Harin'Hala, 1♂ (00045507) (CAS); 24 Jun 2004–08 Jul 2004, M. Irwin, R. Harin'Hala, 1♂ (00007169) (AMNH); 23 Sep 2004–07 Oct 2004, M. Irwin, R. Harin'Hala, 1♂ (00045660) (SU); 11 Dec 2004–18 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00045625) (UCR); 02 Feb 2005–17 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045563) (CAS); 27 Feb 2005–13 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00007069) (UCR); 25 Jul 2006–09 Aug 2006, M. Irwin, R. Harin'Hala, 1♂ (00045371) (CAS). Ranomafana JIRAMA water works, 21.2485°S 47.45216°E, 690 m, 22 Nov 2001–28 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00006124) (UCR); 06 Dec 2001–15 Dec 2001, M. Irwin, R. Harin'Hala, 4♂ (00006982, 00006988, 00006991, 00006996) (CAS), 2♂ (00007020, 00007031) (SU); 21 Dec 2001–24 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007276) (CAS); 24 Dec 2001–02 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00006986) (UCR); 21 Jan 2002–28 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00044847) (SU), 1♂ (00045687) (CAS). **Toliara:** Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 29 Aug 2004–08 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00007197) (UCR), 1♂ (00007248) (CAS), 1♂ (00007250) (SU). **Unknown:** 12♂ (00006983, 00006987, 00006989, 00006990, 00006992, 00007010, 00007024, 00007026, 00007221, 00007271, 00007277, 00007279) (CAS).

Glymmatophora Stål, 1853

Plates 1, 2, 5, 8, 12, 13A, 13D, 15E, 16B, 16C, 16E, 17B, 19C, 20D, 21C, 21D, 22B, 23C, 23D, 23F; map 4

Glymmatophora Stål, 1853: 261.

Type species: *Glymmatophora submetallica* Stål, 1853.

Distribution: Thirty-five described species of *Glymmatophora* occur throughout Africa (Maldonado, 1990). Within Madagascar, the two species of *Glymmatophora* are known from the Toliara and Fianarantsoa provinces. Specimens have been collected in spiny forest thicket, degraded grassland, and in the Antsarongaza dry forest between 18–825 m elevation.

Discussion: The largely Afrotropical genus *Glymmatophora* was described by Carl Stål in 1853. In 1914, Géza Horváth described three subgenera: (*Cyclosandalus*), (*Glymmatophora*), and (*Haematorrhophus*), the last of which is currently treated as a distinct genus. The former two subgenera were primarily diagnosed based on the presence (subgenus *Glymmatophora*) or absence (subgenus *Cyclosandalus*) of ocelli in the female and the size and shape of the fossula spongiosa (large and oblong in subgenus *Glymmatophora*; small and round in subgenus *Cyclosandalus*). Prior to this monograph, one species of *Glymmatophora* was known from Madagascar, *G.* (*Cyclosandalus*) *crassipes*. A new Madagascan species of *Glymmatophora* is here described, *G.* (*Glymmatophora*) *carolae*.

Identification Key to the Males and Females of Madagascan Species of *Glymmatophora*

1. Males only known; macropterous; ocelli present . . .(*Glymmatophora*) *carolae*, new species
– Males and females apterous; ocelli absent (pl. 13D). . . . .(*Cyclosandalus*) *crassipes* Horváth

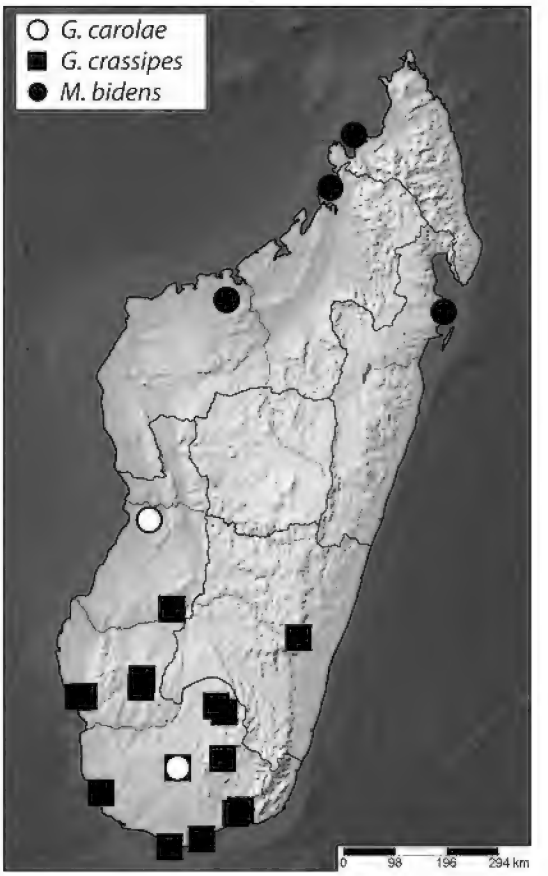
Glymmatophora (*Glymmatophora*) *carolae*, new species

Plates 1, 5, 8, 16C, 17B, 20D, 21C; map 4

Diagnosis: Males are recognized among other *Glymmatophora* species by the very distinctive coloration (mostly red with some black markings), anteriorly concave postclypeus, forefemur with anterior subapical and medial protuberances and macropterous condition. This species is very similar to the Afrotropical *G. lothei* Villiers, 1948, from which it differs by the slightly smaller body size, black antenna, red abdomen with black markings (i.e., anterior band on laterotergites IV and V, laterotergite VI

except posterolaterally, anterior half of laterotergite VII, lateral margin of abdominal sternite VI, and anterolateral margin of sternite VII), more medially concaved anterior pronotal margin, and forefemur with only two protuberances.

Description: **MALE:** Macropterous, medium body size (length: 16.91 mm, holotype; 14.90–16.91 mm). COLORATION: Red with antenna, hemelytron except corium basally and anteriorly, anterior band on laterotergites IV and V, laterotergite VI except posterolaterally, anterior half of laterotergite VII, lateral margin of abdominal sternite VI, and anterolateral margin of sternite VII black. VESTITURE: Glabrous, except antenna with long, erect brown setae and tibiae with stout pale brown setae that are denser near apex. STRUCTURE: Head: Subquadrate in lateral view (pl. 13D); wider than long in dorsal view; ventrally flat; anteocular region as long as postocular; gula swollen ventrolaterally, slightly produced beyond ventral margin of head (pl. 13E); maxillary plate not reaching dorsal clypeal surface (pl. 13E, I); postclypeus concave anteriorly with shallow, very narrow medial longitudinal depression to middle of interocular area; synthlipsis (pl. 13A) about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli small, located on distinct median tubercle (pl. 13H), separated by more than diameter of ocellus; eye about one-third head length, not reaching dorsal and ventral head surfaces; antennal shield concealing antennal insertion in lateral view (pl. 13D); antenna inserted sublaterally on head; pedicel about one-fourth longer than scape, slightly curved. Thorax: Pronotum wider than long, anterior margin moderately concave, smooth; anterior pronotal lobe shorter than posterior lobe (pl. 15B), more than half as wide as posterior lobe, without distinct anterolateral projections; pronotal longitudinal furrow reaching anterior but not posterior margin, weakly foveate posteriorly (pl. 15B); pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15A, B); lateral depressions of posterior pronotal lobe distinct (pl. 15B), weakly transversely striated; meso- and metasterna not completely separated by transverse suture (pl. 15E); mesosternum with medial and paramedial longitudinal depressions (pl. 15F); metasternum medially longitudinally depressed (pl. 15F); MGE with shallow meshlike cuticle that does not extend dorsally in lateral view (pl. 16B, C); forefemur with anterior subapical and medial protuberances (pl. 16E), base ventrally carinate; mid and hind femora with anterior and posterior subapical and medial protuberances; foretibia with ventral spine basal to fossula spongiosa; hemelytron (pl. 17B) surpassing abdominal tergite VII but not reaching apex; corium well developed; distal part of R present but not forming R+M cell; proximal parts of M and Cu fused; distal part of M extending beyond apical junction of M+Cu; base of M+Cu cell shorter than or as wide as Cu+1A cell. Abdo-



MAP 4. Localities of *Glymmatophora* species and *Maraenaspis bidens*.

MEN: Apex rounded; dorsal laterotergite II expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; sternites shallowly depressed medially (pl. 18C); spiracles ovoid; pygophore process dorsally knoblike in lateral view (pl. 20D), subtriangular in caudal view (pl. 19C), directed dorsoposteriad, not surpassing posterior margin of pygophore, apex rounded; BPE shorter than basal plate; DPS apex concave medially (pl. 21C); endosomal struts reaching posterior margin of DPS (pl. 21C), ventrally obscured by semiextend endosoma; area of endosomal struts–DPS fusion elongate subquadrate; endosoma medially sclerotized posteriorly and sclerotization extending anterolaterally (pl. 21C).

ETYMOLOGY: This species epithet is a noun in the genitive case and is named in memoriam of the senior author's mother, Carol Forthman.

DISTRIBUTION: Antsarongaza dry forest in the Toliara province (map 4).

DISCUSSION: Female specimens are unknown. We assign this species to the subgenus *Glymmatophora* based on the features mentioned in the generic discussion.

HOLOTYPE: Male: **Madagascar: Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 17 Nov 2008–25 Nov 2008, M. Irwin, R. Harin'Hala (00044889) (CAS).

PARATYPES: **Madagascar: Toliara:** Bekily, 24.22802°S 45.30858°E, 388 m, Oct 1936, A. Seyrig, 2♂ (MNHN); Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 05 Feb 2009–13 Feb 2009, M. Irwin, R. Harin'Hala, 1♂ (00045479) (CAS).

Glymmatophora (*Cyclosandalus*) *crassipes* Horváth, 1914

Plates 1, 2, 5, 8, 12, 13A, 13D, 15E, 16B, 16E, 19C, 21D, 22B, 23C, 23D, 23F; map 4

Glymmatophora (*Cyclosandalus*) *crassipes* Horváth, 1914: 128.

REVISED DIAGNOSIS: Males and females are recognized among other species in this genus by the apterous condition, lack of ocelli in both sexes, and fossula spongiosa on foretibia small and round. This species is similar to apterous forms of *G. lothei*, but the presence of two protuberances on the forefemur distinguishes *G. crassipes* from *G. lothei*.

REDESCRIPTION: **MALE:** Apterous, medium body size (length: 15.52–19.60 mm). COLORATION: Black with head, labium, scape, pedicel basally, pronotum except pronotal longitudinal furrow, propleuron except dorsal spot and stripe on anterior lobe, meso- and metapleura dorsad of coxae, meso- and metasterna laterally, legs, laterotergite II, laterotergite III and IV posteriorly, sternites II–VI transversely basally, sternite VII posteriorly, and pygophore red. VESTITURE: Glabrous, except antenna with short, semierect to erect brown setae and tibiae with stout, pale brown setae that are denser near apex. STRUCTURE: HEAD (pl. 13A, D): Subquadrate in lateral view; longer than wide in dorsal view; ventrally flat; anteocular region longer than postocular; gula swollen ventrolaterally, not produced beyond ventral margin of head, carinate; maxillary plate not reaching dorsal clypeal surface (pl. 13E, I); postclypeus flat; synthlipsis about 2.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antennal shield concealing antennal insertion in lateral view; antenna inserted sublaterally on head; pedicel slightly longer than scape, slightly curved. THORAX (pl. 15E): Pronotum as long as wide, anterior margin slightly concave, smooth; anterior pronotal lobe longer than and as wide as posterior lobe (pl. 15A), without distinct anterolateral projections; pronotal longitudinal furrow not reaching anterior and posterior margins, reduced to deep medial depression near posterior margin of anterior lobe (pl. 15A); pronotal transverse furrow weakly to strongly divided by paramedian longitudinal ridges (pl. 15A); lateral depressions of posterior pronotal lobe obsolete; meso- and metasterna not completely separated by transverse suture; mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with shallow meshlike cuticle that does not extend dorsally in lateral view (pl. 16B, C); tro-

chanters and fore- and mid femora basally with patches of small papillae (pl. 16E); forefemur with anterior subapical and medial protuberances (pl. 16E); mid and hind femora with anterior and posterior subapical and medial protuberances; foretibia with ventral spine basal to fossula spongiosa. Abdomen: Apex rounded; dorsal laterotergite II slightly expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; sternites medially flat; spiracles ovoid; pygophore (pls. 19C, 20D) process dorsally knoblike in lateral view, subtriangular in caudal view, directed dorsoposteriad, not surpassing posterior margin of pygophore, apex rounded; BPE about as long as basal plate (pl. 22B); DPS apex rounded (pl. 21D); endosomal struts reaching posterior margin of DPS, with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21D); endosoma medially sclerotized posteriorly and extends anterolaterally (pl. 21D). **FEMALE:** Body length: 16.50 mm (holotype; from original description), 16.50–23.90 mm. Similar to males, but differ in the following characters: COLORATION: Red on prothorax, mesopleuron, metapleuron dorsad of coxa, lateral metanotal spots, scutellum laterally, meso- and metasterna, laterotergite II, posterolateral margin of laterotergites III–VII, and sternite VII posteromedially. STRUCTURE: Thorax: Fossula spongiosa larger. Abdomen: External genitalia as in plate 23C, D; bursa copulatrix membranous, with lateral lobes (pl. 23F); vermiform gland and lateral spermathecae missing.

Distribution: Most specimens were collected in the Fianarantsoa and Toliara provinces and were successfully georeferenced (map 4). Some could not be georeferenced beyond province based on locality data, with most of them collected in the Toliara province. One specimen was associated with historical locality data that could not be georeferenced (i.e., "Amboasary [Imerina]"). Imerina refers to a kingdom that once existed and likely is part of modern-day Antananarivo province. A second specimen could not be georeferenced but was collected from "P. Majanga" in the Mahajanga province. It is not clear if "P. Majanga" is referring to a park within the Mahajanga province or the town Mahajanga.

Discussion: A few specimens without or with reduced red coloration on the scutellum, laterotergites, and sternites were examined and are treated as conspecific with *G. crassipes* based on corresponding external and internal morphology. Specimens of both color morphs were collected in close proximity.

Holotype: Female: **Madagascar: Toliara:** Tsivory, 24.0684°S 46.07471°E, 431 m, 1906 Fauchère (HNHM).

Other material examined: **Madagascar: Antananarivo:** Amboasary (Imerina), 1899, G. Grandidier, 1♀ (MNHN). **Fianarantsoa:** Ikongo, 21.99483°S 47.37065°E, 536 m, 1902, G. Grandidier, 1♂ (MNHN). **Mahajanga:** P. Majanga, Nov 1965, Malzy 1♂ (MNHN). **Toliara:** 18 km NW Betroka, 23.16333°S 45.96861°E, 825 m, 04 Dec 1994–09 Dec 1994, M.A. Ivie and D.A. Pollock, 1♂ (00120258) (MTEC). Ankazoabo, 21.50348°S 45.20956°E, 278 m, 1902, J. Bastard, 1♀ (MNHN); 1920, G. Le Barbier, 1♂ (MNHN); no date provided, 1♀ (MNHN). Antaloba, no date provided, 1♀ (MNHN). Bas Mangoky, Agriculture Station, no date provided, 1♂, 1♀ (MNHN). Behara, 24.95347°S 46.38593°E, 49 m, 10 Aug 1918–11 Aug 1918, A.R., 1♀ (MNHN). Bekily, 24.22802°S 45.30858°E, 388 m, Mar 1936, A. Seyrig, 1♂ (MNHN). Berenty Reserve, W of Fort Dauphin, 25.00564°S 46.30278°E, 09 Nov 2008–24 Nov 2008, J.R. Cryan and G. Svenson, 2♂ (00088087, 00088088) (UCR). Betroka, Andalamby, 23.26833°S 46.10444°E, 822 m, Jan 1958, J. Elie, 1♀ (MNHN). Country Mahafaly, 1906, J. Bastard, 1♂ (MNHN). Lambomakandro, 22.69831°S 44.70099°E, 526 m, 1936, R. Catala 1♀ (MNHN). Mahafaly Plateau, 6.2 km 74° ENE Itampolo, 24.65361°S 43.99666°E, 80 m, 21 Feb 2002–25 Feb 2002, Fisher et al., 1♀ (00007050) (CAS). Mahafaly Plateau, Ankalirano, 25.45°S 45.71667°E, 18 m, 17 Jan 1974, P. Viette & A. Peyrieras, 1♀ (MNHN). On plateau, 23.00283°S 43.70366°E, 30 m, 26 Feb 2003–08 May 2003, Frontier Wilderness Project, CAS, 1♀ (00006372) (CAS). Onilahy River, 1922, G. Petit, 1♀ (MNHN). Ranobe, 23.00943°S 43.60934°E, 20 m, 1905, F. Geay, 2♀ (MNHN). Réserve Spéciale de Cap Sainte Marie, 12.3 km 262° W Marovato, 25.58166°S 45.16833°E, 200 m, 11 Feb 2002–15 Feb 2002, Fisher et al., 1♂ (00044857) (CAS). Zombitse-Vohibasia National Park, Eastern Sakaraha, Matsabory, 22.8417°S 44.68184°E, 640 m, 13 Feb 1974, P. Viette and A. Peyrieras, 1♂ (MNHN).

Maraenaspis Karsch, 1892
Plates 2, 5, 8, 13E, 15A, 19D, 20E, 21E, 22C; map 4

Maraenaspis Karsch, 1892, 18: 134.

TYPE SPECIES: *Maraenaspis typhlops* Karsch, 1892.

DISTRIBUTION: Thirty-eight described species of *Maraenaspis* occur throughout the Afrotropics (Maldonado, 1990). Specimens of the only known Madagascan species *Maraenaspis* have been collected from Nosy Be Island off the northwest coast, as well as the Antsiranana, Mahajanga, and Toamasina provinces. Records are from tropical dry forest between 8–135 m elevation.

DISCUSSION: *Maraenaspis* was described by Ferdinand Karsch in 1892. *Maraenaspis bidens* (Reuter), which was originally described from an apterous female, is the only species of *Maraenaspis* known from Madagascar. The male of *M. bidens* is described here for the first time.

Maraenaspis bidens (Reuter), 1887
Plates 2, 5, 8, 13E, 15A, 19D, 20E, 21E, 22C; map 4

Cleptria bidens Reuter, 1887: 108.
Maraenaspis bidens: Villiers, 1945: 199.

REVISED DIAGNOSIS: Males and females are recognized among other species of *Maraenaspis* by a combination of the following characters: the large body size, coloration, anterior pronotal lobe with very large anterolateral projections, apterous condition, ovoid abdomen that is apically notched, and sternites convex. This species is similar to *M. neglecta* Villiers, 1948, but is distinguished by the slightly larger body size, bluish-black coloration on the head and legs, and very strong anterolateral protuberances on the anterior pronotal lobe.

REDESCRIPTION: **MALE:** Apterous; large body size (length: 21.63–22.08 mm). COLORATION: Bluish-black suffused with violet sheen on abdominal tergites. Antennal segments III, IV, base of V, and apex of VIII brown and antennal segments V apically, VI, VII, and VIII basally pale to light brown. VESTITURE: Glabrous, except antenna with short, semierect to erect pale to brown setae and tibiae with stout pale orange-brown setae that are denser near apex. STRUCTURE: HEAD (pl. 13E): Ovoid in lateral view; longer than wide in dorsal view; ventrally flat; anteocular region longer than postocular; gula swollen ventrolaterally, produced beyond ventral margin of head, carinate; maxillary plate not reaching dorsal clypeal surface; postclypeus flat; antennal shield not concealing antennal insertion in lateral view; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-fourth longer than scape, slightly curved. THORAX (pl. 15A): Pronotum as long as wide, smooth; anterior pronotal lobe with large anterolateral projections; pronotal longitudinal furrow reaching anterior but not posterior margins, deeply depressed near posterior margin of anterior lobe; pronotal transverse furrow divided by paramedian longitudinal ridges; lateral depressions of posterior pronotal lobe obsolete; meso- and metasterna not completely separated by transverse suture (pl. 15E); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with shallowly depressed meshlike cuticle that does not extend dorsally in lateral view (pl. 16B, C); trochanters and fore- and mid femora basally with small papillae (pl. 16E). ABDOMEN: Apex medially notched; dorsal laterotergite II expanded; intersegmental sutures carinulate between sternites II and III and laterally between III–VII; sternites medially flat; spiracles elliptical; pygophore (pls. 19D, 20E) process hooklike in lateral view, subtriangular in caudal view, directed dorsoposteriad, not surpassing posterior margin of pygophore, apex rounded; BPE shorter than basal plate; DPS apex rounded (pl. 21E); endosomal struts reaching posterior margin of DPS, ventrally obscured by semiextended endosoma; area of endosomal struts–DPS fusion

circular (pl. 21E); endosoma with platelike sclerite on posterior margin (pl. 21E). **FEMALE:** Body length: 21.5 mm (holotype; original description), 21.30–23.00 mm; coloration and structure same as the male.

Distribution: Natural Reserve of Lokobe on Nosy Be Island, and the Antsiranana, Mahajanga, and Toamasina provinces (map 4).

Discussion: This species was described from a single female specimen collected (coll. Stumpff) in "Loucoubé," which is currently known as the Natural Reserve of Lokobe on Nosy Be Island. Putshkov and Putschkov's (1986) Ectrichodiinae catalog indicates that the holotype for *M. bidens* is deposited in the National Museum of Natural History, Paris, France, but the type could not be located (Eric Guilbert, personal commun.). Correspondence with other major European collections did not offer any further leads, and we conclude that the type may be lost or placed within undetermined material. Given the potential that the holotype may be located among undetermined material that we have not examined, we refrain from designating a neotype.

The male and female specimens examined match Reuter's original description of the species, with the exception of the antennal coloration. The original description states that the last four antennal segments in the female are "straminous" with the "base of the fifth yellowish." In the females examined, the distal antennal segments were missing; in the males, antennal segments III, IV, base of V, and apex of VIII are brown, while segments V apically, VI, VII, and VIII basally are pale to light brown. This slight difference is considered to be variation within the species or between the sexes.

Holotype: Female: **Madagascar: Toliara:** Nosy Be, Lokobe Natural Reserve, 13.39917°S 48.31833°E, 204 m (see Discussion regarding depository).

Other material examined: **Madagascar: Antsiranana:** Forêt d'Anabohazo, 21.6 km 247° WSW Maromandia, 14.30888°S 47.91444°E, 120 m, 11 Mar 2001–16 Mar 2001, Fisher et al., (00044913) (CAS). **Mahajanga:** Parc National d'Ankarafantsika, Forêt de Tsimaloto, 18.3 km 46° NE de Tsaramandroso, 16.22805°S 46.14361°E, 135 m, 02 Apr 2001–08 Apr 2001, Fisher et al., 1♂ (00045017) (CAS). **Toamasina:** Alahakato Forest, 1888, Edouard Perrot, 1♀ (MNHN). Antanambe, 16.43333°S 49.85°E, 8 m, 1898, A. Mocquerys, 1♀ (MNHN).

Marojejycoris, new genus

Plates 2, 5, 6, 9, 13F, 19E, 20F, 21F, 22D; map 5

Type species: *Marojejycoris notadichroa*, new species.

Diagnosis: Males are recognized by the small body size, dull coloration, dense vestiture, broadly depressed postclypeus, ocelli located on a shallow medial ocellar tubercle, large antennal shield that does not conceal the antennal insertion in lateral view, continuous transverse suture on the pronotum, MGE with deeply depressed meshlike cuticle the extends dorsally in lateral view, distal part of M not extending beyond apical junction of M+Cu, dorsal laterotergite II not expanded, and circular spiracles. *Marojejycoris* species are similar to the Afrotropical genus *Synavecoris*, but are distinguished by the denser vestiture, head longer than wide in dorsal view, depressed postclypeus, presence of the antennal shield, more medially excavated anterior margin of the pronotum, anterior pronotal lobe lacking carinae laterally, continuous transverse suture, meso- and metasterna separated by a distinct transverse suture, MGE extending dorsally in lateral view, unarmed legs, proximal part of M and Cu veins not fused, distal parts of M and Cu not fused, and dorsal laterotergites uniform in color and not expanded.

Description: **MALE:** Macropterous, small body size. COLORATION: Orange-brownish or brown with pale markings. VESTITURE: Dense, semierect to erect, long pale to brown setae on head, thorax, legs, corium of hemelytra, and abdomen; setae on tibiae stouter and denser near apex. STRUCTURE: Head (pl. 13F): Ovoid or subtriangular, longer than wide in dorsal view, shorter than pronotum; anteocular region as long as postocular; ventrally with shallow anteromedial depression; clypeal apex not elevated relative to labrum; maxillary plate not reaching dorsal surface of clypeus (pl. 13E, I); postclypeus

broadly depressed (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli present, located on shallow medial tubercle, separated by less than diameter of ocellus; distinct constriction between postocular and neck; gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin; antennal shield not concealing antennal insertion in lateral view; antenna inserted dorsally on head; scape surpassing clypeal apex; pedicel slightly curved; flagellum subdivided into BFLA and DFLA; BFLA divided into two pseudosegments; DFLA divided into two or three pseudosegments; antenna thus appearing 6- or 7-segmented; labium relatively slender; labial segment III shorter than II, ventrally convex (appears dorsal when reposed). Thorax: Pronotum wider than long, anterior margin distinctly concave, collar distinct (pl. 15B); anterior pronotal lobe shorter than posterior lobe (pl. 15B), more than half as wide as posterior lobe, without distinct anterolateral projections, relatively smooth; pronotal longitudinal furrow reaching anterior but not posterior margin of pronotum, weakly to strongly foveate posteriorly (pl. 15B); pronotal transverse furrow continuous; lateral depressions on posterior pronotal lobe distinct (pl. 15B), transversely striated; scutellum with two moderately separated apical processes, disc medially depressed; meso- and metasterna separated by distinct transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with deeply depressed meshlike cuticle that extends dorsally in lateral view (pl. 16A); fossula spongiosa on foretibia, absent on mid tibia in some species; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex; corium restricted to areas adjacent to basal wing veins, with pterostigmalike appearance on anterodistal margin (pl. 17A, C); proximal parts of M and Cu separate (pl. 17A, C); distal part of M not extending beyond apical junction of M+Cu; base of M+Cu cell shorter than or as wide as Cu+1A cell (pl. 17B, C). Abdomen: Apex rounded; dorsal laterotergites not expanded; sternites longitudinally depressed medially (pl. 18C), intersegmental sutures carinulate; spiracles circular; pygophore (pls. 19E, 20F) process flattened in lateral view, broadly rodlike in caudal view, directed dorsoposteriad, not surpassing posterior margin of pygophore, apex rounded; DPS apex rounded (pl. 21F); endosomal struts reaching posterior margin of DPS, with anterior and posterior ventral processes (pl. 22G); endosoma sclerotized medially (pl. 21F).

Etymology: The genus is a named after the type locality of the type species, Marojejy National Park, Madagascar. The gender is feminine.

Distribution: Species are known from the Antsiranana, Fianarantsoa, and Toamasina provinces and in habitats between 10–1130 m elevation. Macrohabitats are described as mixed tropical forests, low altitude rainforests and dense humid forests, and forested limestone ridge.

Discussion: Female specimens are unknown for all species in this genus.

Identification Key to the Males of Species of *Marojejycoris*

1. DFLA divided into two pseudosegments; antenna thus appearing 6-segmented 2
– DFLA divided into three pseudosegments; antenna thus appearing 7-segmented 3
2. Postclypeal depression extending to middle of interocular area (pl. 13B); eye about one-fourth head length in lateral view; scape, pedicel, and antennal segments III–IV and base of V dark brown, nearly black; corium orange ..... *auranticorium*, new species
– Postclypeal depression extending to interocular sulcus; eye about one-third head length in lateral view; scape apically, antennal segments II–IV, and base of V brown; corium brown ..... *notadichroa*, new species
3. Fossula spongiosa absent or reduced on the mid tibia 4
– Fossula spongiosa distinctly present on the mid tibia ..... *ranomafana*, new species
4. Synthlipsis about two times width of eye; eye not reaching dorsal and ventral head margins..... *francais*, new species

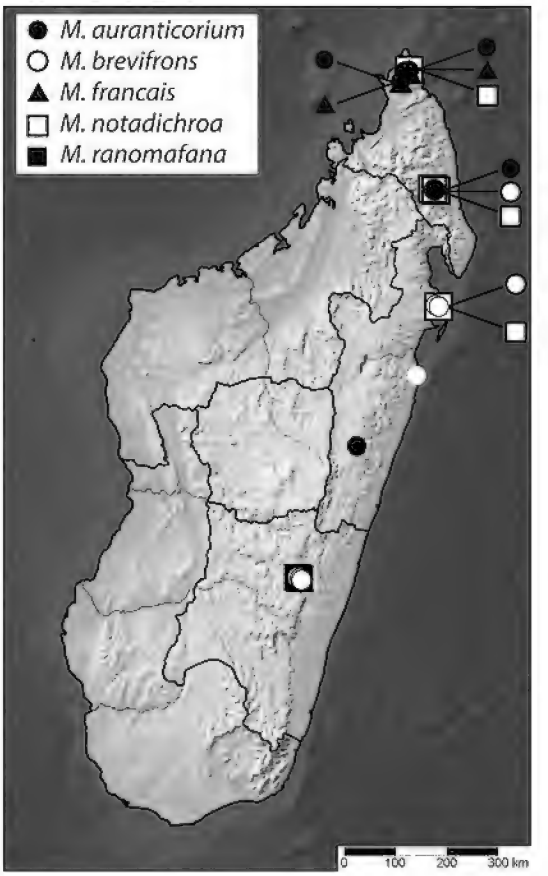
– Synthlipsis about width of eye; eye reaching dorsal and ventral head margins (pl. 13F) . . . . . *brevifrons*, new species

***Marojejycoris auranticorium*, new species**
Plates 2, 5, 9, 19E, 20F; map 5

Diagnosis: Males are recognized among other *Marojejycoris* species by the larger body size, coloration of antenna and corium, subtriangular head shape in lateral view, relatively small ocelli, and 6-segmented antenna. This species is similar to *M. notadichroa*, but differs by the uniform dull orange pronotum, orange corium, slightly more shallow postclypeal depression that extends to middle of interocular area, slightly smaller ocelli, and eye about one-fourth of the head length in lateral view.

Description: Body length: 9.10 mm (holotype), 8.54–9.18 mm. COLORATION: Dull orange with thorax, coxae, trochanters, and hemelytron basally light orange-brown. Scape, pedicel, antennal segments III–IV and base of V, posterior margin of pronotum, and wing membrane dark brown. Antennal segment V apically and VI white. VESTITURE: As in generic description. STRUCTURE: Head: Subtriangular in lateral view (pl. 13G–I); postclypeus with very shallow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna 6-segmented, pedicel about one-fourth longer than scape. Thorax: Posterior pronotal lobe smooth; forefemur slightly incrassate; fossula spongiosa present on mid tibia; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; BPE shorter than basal plate (pl. 22D); area of endosomal struts–DPS fusion ovate (pl. 21F).

Etymology: The species epithet is a noun in the nominative case and is named for the orange corium.



MAP 5. Localities of *Marojejycoris* species.

Distribution: Antsiranana and Toamasina provinces (map 5).

Discussion: The coloration varies throughout the body of some specimens from light orange-brown to dull orange.

Holotype: Male: **Madagascar: Antsiranana:** Montagne Français, 12.325°S 49.33333°E, 150 m, 30 Jan 2001–15 Feb 2001, M. Irwin, R. Harin'Hala (00045023) (CAS).

Paratypes: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.33333°S 49.25°E, 360 m, 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00045331) (CAS). Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 15 Jan 2005–26 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00044906) (CAS); 18 May 2005–30 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00045555) (UCR). Montagne Français, 12.325°S 49.33333°E, 150 m, 30 Jan 2001–15

Feb 2001, M. Irwin, R. Harin'Hala, 1♂ (00007120) (USNM); 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 2♂ (00007163, 00044966) (SU). Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 19 Mar 2001–05 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00044916) (CAS). Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 04 Mar 2001–19 Mar 2011, M. Irwin, R. Harin'Hala, 1♂ (00045016) (USNM); 19 Mar 2001–05 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006474) (UCR). **Toamasina:** Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 21 May 2001–04 Jun 2001, M. Irwin, R. Harin'Hala, 1♂ (00006125) (CAS). **Unknown:** 2♂ (00007103, 00044988) (CAS).

Marojejycoris brevifrons, new species

Plates 2, 5, 9, 13F, 21F; map 5

Diagnosis: Males are recognized among other species in this genus by the small body size, coloration, ovoid head shape, 7-segmented antenna, synthlipsis width about the width of an eye, eye reaching dorsal and ventral head margins, and fossula spongiosa absent on mid tibia. This species is similar to *M. ranomafana*, but is differentiated by the slightly larger body size, dark brown head and corium, lateral areas of anterior pronotal lobe dark brown with medial area pale to light brown, abdomen uniformly light brown to dull orange-brown, smaller synthlipsis width, interocular sulcus near the hind margin of the eye, smooth posterior pronotal lobe, distal part of R present, intersegmental sutures carinulate between sternites II–V (sometimes VI) and laterally between V–VII, and BPE shorter than the basal plate.

Description: Body length: 7.13 mm (holotype), 5.63–7.13 mm. COLORATION: Pale brown with dark brown head (except ventral anteocular surface), scape except basally, pedicel except basally, anterior pronotal lobe laterally, dorsal half of pro- and mesopleura, scutellum except apical processes, wing membrane, femora distally, and tibiae. Postocular ventrolaterally, labium, and antennal segments III and IV orange-brown. Disc of pronotum, posterior pronotal lobe, corium (except basally), and basal wing veins brown. Antennal segments V and VI white. VESTITURE: As in generic description. STRUCTURE: Head (pl. 13F): Ovoid in lateral view; postclypeus with very shallow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large; eye about one-third of head length, reaching dorsal and ventral head surfaces; antenna 7-segmented, pedicel about as long as scape. Thorax: Posterior pronotal lobe smooth; forefemur slightly incrassate; fossula spongiosa absent on mid tibia; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Intersegmental sutures carinulate between sternites II–V (sometimes VI) and laterally between V–VII; BPE shorter than basal plate (pl. 22D); area of endosomal struts–DPS fusion ovate (pl. 21F).

Etymology: The species epithet is a noun in the nominative case and is named for the short length of the anteocular.

Distribution: Antsiranana, Fianarantsoa, and Toamasina provinces (map 5).

Discussion: In some specimens, the intersegmental suture between sternites V and VI is entirely carinulate rather than being restricted to the lateral area.

Holotype: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 09 Apr 2002–16 Apr 2002, M. Irwin, R. Harin'Hala (00006479) (CAS).

Paratypes: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 10 Jan 2005–15 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00044981) (CAS); 26 Jan 2005–04 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00007167) (SU); 04 Apr 2005–16 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00007146) (UCR). R.N.I. de Marojejy, 8.0 km NW Manantenina, 14.43667°S 49.775°E, 450 m, 05 Oct 1996–13 Oct 1996, E. Quinter and T. Nguyen, 1♂ (00078365) (AMNH). R.N.I. de Marojejy, 10.0 km NW Manantenina, 14.43333°S 49.76167°E, 750 m, 15 Oct 1996–22 Oct 1996, E. Quinter and T. Nguyen, 1♂ (00078366) (AMNH). **Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 10 Jan 2002–14 Jan 2002, M. Irwin, R. Harin'Hala, 1♂

(00006142) (CAS); 12 Feb 2002–19 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007049) (UCR). Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1100 m, 04 Jun 2002–14 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00007051) (CAS). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 28 Nov 2001–06 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007122) (CAS); 09 Mar 2003–20 Mar 2003, M. Irwin, R. Harin'Hala, 1♂ (00007198) (CAS); 17 Dec 2003–30 Dec 2003, M. Irwin, R. Harin'Hala, 1♂ (00007241) (BMNH); 08 Jul 2004–22 Jul 2004, M. Irwin, R. Harin'Hala, 1♂ (00045538) (BMNH); 09 Aug 2005–25 Aug 2005, M. Irwin, R. Harin'Hala, 2♂ (00044830, 00045518) (USNM); 27 Nov 2006–02 Dec 2006, M. Irwin, R. Harin'Hala, 1♂ (00006123) (SU). **Toamasina:** Forêt d'Analava Mandrisy, 5.9 km 195° Antanambe, 16.48555°S 49.84694°E, 10 m, 12 Nov 2005–13 Nov 2005, Brian L. Fisher et al., 1♂ (00045579) (CAS). Mobot Site, Analalava 7 km SW of Foulpointe, 17.69333°S 49.46027°E, 18 m, 30 Nov 2007–07 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00006480) (CAS). Parc National Mananara-Nord, 7.1 km 261° Antanambe, 16.455°S 49.7875°E, 225 m, 14 Nov 2005, Brian L. Fisher et al., 1♂ (00006471) (CAS). **Unknown:** 3♂ (00007157, 00007234, 00007239) (CAS).

Marojejycoris francais, new species

Plates 2, 5, 9, 22D; map 5

Diagnosis: Males are recognized among other species in *Marojejycoris* by the small body size, ovoid head shape, 7-segmented antenna, fossula spongiosa absent on the mid tibia, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI. This species is similar to *M. notadichroa*, from which it differs by the small body size, less elongated and more ovoid head, slightly more shallow postclypeal depression, interocular sulcus near hind margin of the eye, 7-segmented antenna, fossula spongiosa absent on mid tibia, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI.

Description: Body length: 6.18 mm (holotype), 6.18–6.82 mm. COLORATION: Dull orange with labial segments III and IV, thoracic sterna, scutellum, corium basally, coxae, trochanters, femora basally, and abdomen pale. Scape apically, pedicel, and antennal segments III–VI dark brown. Wing membrane brown and antennal segment VII white. VESTITURE: As in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13D); postclypeus with very shallow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna 7-segmented; pedicel about one-third longer than scape. Thorax: Posterior pronotal lobe smooth; forefemur incrassate; fossula spongiosa absent on mid tibia; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; BPE shorter than basal plate (pl. 22D); area of endosomal struts–DPS fusion ovate (pl. 21F).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Montagne Français, Madagascar.

Distribution: Montagne des Français Reserve and Amber Mountain National Park in the Antsiranana province (map 5).

Holotype: Male: **Madagascar: Antsiranana:** Montagne Français, 12.325°S 49.33333°E, 150 m, 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala (00006470) (CAS).

Paratypes: **Madagascar: Antsiranana:** Parc National Montagne d'Ambre, 12.51666°S 49.18333°E, 975 m, 25 Jan 2001–11 Feb 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00044900) (UCR). Parc National Montagne d'Ambre, 12.52027°S 49.17916°E, 1125 m, 04 Mar 2001–19 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006129) (CAS).

Marojejycoris notadichroa, new species

Plates 2, 6, 9; map 5

Diagnosis: Males recognized among other species in this genus by a combination of the following characters: the larger body size, more deeply depressed postclypeus, postclypeal depression extending to the interocular sulcus, and 6-segmented antenna. This species is similar to *M. auranticorium*, from which it differs by the general brown color of the antenna, bicolored pronotum (anterior lobe orange-brown and posterior lobe

dark brown), dark brown corium (except basally pale), deeper postclypeal depression that extends to the interocular sulcus, and eye about one-third of the head length in lateral view.

Description: Body length: 8.18 mm (holotype), 7.40–8.73 mm. VESTITURE: As in generic description. COLORATION: Orange with thoracic pleura and sterna, corium basally, and abdomen pale. Scape apically, pedicel, antennal segments III–IV and basal half of V, posterior pronotal lobe, and remainder of hemelytron brown. Apical half of antennal segment V and segment VI entirely white. STRUCTURE: Head: Ovoid in lateral view (pl. 13D); postclypeus with relatively deep medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; ocelli large; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna 6-segmented, pedicel about as long as scape. Thorax: Posterior pronotal lobe smooth; forefemur incrassate; fossula spongiosa present on mid tibia; distal part of R present but not forming R+M cell (pl. 17B, C). Abdomen: Intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; BPE shorter than basal plate (pl. 22D); area of endosomal struts–DPS fusion ovate (pl. 21F).

Etymology: The species epithet is a noun in the nominative case and is named for the bicolored pronotum.

Distribution: Antsiranana and Toamasina provinces (map 5).

Holotype: Male: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 10 Jan 2005–15 Jan 2005, M. Irwin, R. Harin'Hala (00045019) (CAS).

Paratypes: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 09 Dec 2004–15 Dec 2004, M. Irwin, R. Harin'Hala, 2♂ (00045521, 00045672) (CAS); 15 Dec 2004–20 Dec 2004, M. Irwin, R. Harin'Hala, 2♂ (00044980, 00045013) (USNM); 25 Dec 2004–30 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00044940) (CAS); 26 Jan 2005–04 Feb 2005, M. Irwin, R. Harin'Hala, 2♂ (00007124, 00045532) (UCR); 16 Apr 2005–28 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00044910) (SU); 18 May 2005–30 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00007115) (SU); 13 Jul 2005–28 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00044969) (UCR). Montaigne Français, 12.325°S 49.33333°E, 150 m, 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006475) (CAS). R.N.I. de Marojejy, 10.0 km NW Manantenina, 14.43333°S 49.76167°E, 750 m, 15 Oct 1996–22 Oct 1996, E. Quinter and T. Nguyen, 1♂ (00078361) (AMNH). **Toamasina:** Forêt d'Analava Mandrisy, 5.9 km 195° Antanambe, 16.48555°S 49.84694°E, 10 m, 12 Nov 2005–13 Nov 2005, Brian L. Fisher et al., 1♂ (00007179) (CAS). **Unknown:** 3♂ (00044991, 00044993, 00045015) (CAS).

Marojejycoris ranomafana, new species

Plates 2, 6, 9; map 5

Diagnosis: Males are recognized among other *Marojejycoris* species by the small body size, bicolored head and thorax in lateral view, ovoid head shape, 7-segmented antenna, striated posterior pronotal lobe, distal part of R absent, intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI, and BPE as long as the basal plate. This species is similar to *M. brevifrons*, but differs by the slightly smaller body size, pale to light brown dorsal and dark brown ventral surfaces of the head and pronotum, pale corium and membrane, wider synthlipsis, interocular sulcus posterior to hind margin of the eye, striated posterior pronotal lobe, fossula spongiosa on mid tibiae, distal part of R absent, intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI, and BPE as long as the basal plate.

Description: Body length: 5.41 mm (holotype), 5.41–5.50 mm. COLORATION: Brown with head laterally and ventrally, pedicel apically, antennal segments III and IV, dorsal half of thoracic pleura, thoracic sterna, coxae, abdominal sternites II–VI laterally, and small lateral spot on sternite VII dark brown. Antennal segment VII, ventral half of thoracic pleura, scutellum except apical processes, corium, trochanters, femora basally, and remainder of abdomen pale. VESTITURE: As in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13D); postclypeus with very shallow medial longitudinal

depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; ocelli small; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna 7-segmented; pedicel about as long as scape. THORAX: Posterior pronotal lobe transversely striated; legs slender; fossula spongiosa present on mid tibia; distal part of R absent. ABDOMEN: Intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; BPE as long as basal plate; area of endosomal struts–DPS fusion elongate subquadrate; endosoma damaged.

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Ranomafana National Park, Madagascar.

DISTRIBUTION: Ranomafana National Park in the Fianarantsoa province (map 5).

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 09 Mar 2003–20 Mar 2003, M. Irwin, R. Harin'Hala (00045464) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1100 m, 04 Feb 2002–12 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00007155) (CAS). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 21 Dec 2001–24 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00007137) (CAS); 26 Nov 2003–06 Dec 2003, M. Irwin, R. Harin'Hala, 1♂ (00048057) (UCR); 07 Oct 2005–16 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00048058) (UCR).

Tanindrazanus, new genus

Plates 2, 3, 6, 7, 9, 10, 13G, 13H, 15D, 15F, 16A, 17C, 18B, 19F, 20G–I, 21G, 21H, 22E; maps 6–9

TYPE SPECIES: *Tanindrazanus irwini*, new species.

DIAGNOSIS: Male recognized by the subtriangular head in lateral view, maxillary plate reaching or nearly reaching dorsal clypeal surface, 7-segmented antenna (6-segmented in some specimens of *T. harinhali*), and slender labium with labial segment III ventrally (appears dorsal when folded under head) straight. *Tanindrazanus* is most similar to *Toliarus*, but can be differentiated by the the medium to large body size, maxillary plate reaching or nearly reaching the dorsal clypeal surface, 7-segmented antenna (except some *T. harinhali*), smooth or striated posterior pronotal lobe, and distinct transverse suture separating the meso- and metasterna.

DESCRIPTION: **MALE:** Macropterous, body size medium to large. COLORATION: Uniformly orange-brownish, brown, or black; red and black; orange and black; red and brown; or dark orange, brown, and black. VESTITURE: Dense, semierect to erect, long pale, orange, brown, and dark brown setae on head, thorax, legs, corium of hemelytra, and abdomen; setae on tibiae stouter and denser near apex. STRUCTURE: HEAD (pl. 13G, H): Subtriangular in lateral view, longer than wide in dorsal view, shorter than pronotum; anteocular region longer than postocular; distinct constriction between postocular and neck; gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin; maxillary plate reaching or nearly reaching dorsal surface of clypeus; postclypeus depressed (pl. 13B); ocelli present; antennal shield not concealing antennal insertion in lateral view; antenna inserted dorsally on head; scape surpassing clypeal apex; pedicel slightly curved; flagellum subdivided into BFLA and DFLA; BFLA divided into two pseudosegments; DFLA divided into three pseudosegments (may be two in some specimens of *T. harinhali*); antenna thus appearing 7-segmented (6-segmented in some specimens of *T. harinhali*); labium slender; labial segment III ventrally straight. THORAX (pl. 15D, F): Pronotum wider than long, anterior margin distinctly concave, collar distinct (pl. 15B); anterior pronotal lobe shorter than posterior lobe, more than half as wide as posterior lobe, relatively smooth; pronotal longitudinal furrow reaching anterior but not posterior margin of pronotum, foveate posteriorly (pl. 15B); pronotal transverse furrow distinct (pl. 15B); lateral depressions on posterior pronotal lobe distinct (pl. 15B), transversely striated; scutellum with

two broadly separated apical processes, disc medially depressed; meso- and metasterna separated by distinct transverse suture; mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with deeply depressed meshlike cuticle that extends dorsally in lateral view (pl. 16A); fossula spongiosa on fore- and mid tibiae; hemelytron (pl. 17C) with corium restricted to areas adjacent to basal wing veins, with pterostigmalike appearance on anterodistal margin; distal part of R present but not forming cell with M; proximal parts of M and Cu separate; distal part of M extending beyond apical junction of M+Cu; base of M+Cu cell shorter than or as wide as Cu+1A cell. Abdomen (pl. 18B): Dorsal laterotergite II not distinctly expanded; sternites longitudinally depressed medially (pl. 18C), intersegmental sutures carinulate; spiracles ovoid; pygophore process subtriangular caudal view (pl. 19F, G, I), directed dorsoposteriad, not surpassing posterior margin of pygophore, apex rounded; DPS apex rounded (pl. 20G, H); endosomal struts reaching posterior margin of DPS, with anterior and posterior ventral processes (pl. 22G); endosoma weakly to heavily sclerotized medially (pl. 21G, H).

Etymology: This genus is named after the Madagascan word "Tanindrazana," which stands for "Fatherland" in the nation's motto and represents national unity. The gender is masculine.

Distribution: Species are known from all provinces and occur in habitats between 10–1130 m elevation. Macrohabitats are described as gallery forests, tropical dry forests, mixed tropical forests, low- and high-altitude rainforests, sclerophyl forests, dwarf littoral forests, secondary forests, and dry deciduous forests.

Discussion: Female specimens are unknown for this genus. Approximately half of the specimens belonging to *T. harinhali* have the DFLA subdivided into two pseudosegments instead of three and the antenna is therefore 6-segmented. Specimens from the same locality may have 6- or 7-segmented antenna and this polymorphism can be observed even within one individual.

Identification Key to the Males of Species of *Tanindrazanus*

1. Clypeal apex not elevated relative to labral base (pl. 13C–F, I–K) 2
– Clypeal apex slightly to distinctly elevated relative to labral base (pl. 13G, H) 3
2. Head elongate, nearly cylindrical; postocular broad in dorsal view (pl. 13B); labial segment II longer than III; forefemora slender ..... *brunneus*, new species
– Head subtriangular (pl. 13G, H); postocular narrow in dorsal view (pl. 13A); labial segment II and III subequal in length; forefemora incrassate ..... *joffrevillus*, new species
3. Anterior pronotal lobe laterally carinate.... 4
– Anterior pronotal lobe not laterally carinate 6
4. Body length ≥20 mm; head ventrally flat; labial segment II shorter than III; red and black or orange and black 5
– Body length <20 mm; head ventrally with shallow anteromedial depression; labial segment II longer than III; dull orange ..... *bemaraha*, new species
5. Red and black; forefemora slightly incrassate; sternal intersegmental sutures carinulate between II and III and laterally between III–V ..... *hannajagodae*, new species
– Orange and black; forefemora slender; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI..... *irwini*, new species
6. Eye reaching dorsal head surface..... 7
– Eye not reaching dorsal head surface..... 11
7. Eye reaching ventral head surface 8
– Eye not reaching ventral head surface ..... *tenebricus*, new species
8. Pronotal transverse suture complete, not divided by paramedian ridges..... 9
– Pronotal transverse suture incomplete, divided by paramedian ridges (pl. 15B)..... *amboasaricus*, new species
9. Eye about half head length; posterior pronotal lobe smooth; dorsal laterotergite II very slightly expanded laterally; sternal intersegmental sutures carinulate between II–V ... *vohiparara*, new species

– Eye about one-third head length; posterior pronotal lobe smooth or striated; dorsal laterotergite II not distinctly expanded laterally; sternal intersegmental suture carinulation patterns not as previously mentioned..... 10

10. Pale to dark brown coloration; synthlipsis about width of eye; postocular narrow in dorsal view; posterior pronotal lobe striated; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VII..... *marginatus*, new species

– Red and pale to dark brown coloration; synthlipsis less than width of eye; postocular broad in dorsal view; posterior pronotal lobe smooth; sternal intersegmental sutures carinulate between II–V and laterally between V–VI ..... *anjozorobeus*, new species

11. Labial segment II and III not subequal in length..... 12

– Labial segment II and III subequal in length . 14

12. Labial segment II shorter than III 13

– Labial segment II longer than III .... *andohahela*, new species

13. Body length <20 mm; red and black; postclypeus not depressed (pl. 13A); pronotal transverse suture complete, not divided by paramedian ridges .... *marojejy*, new species

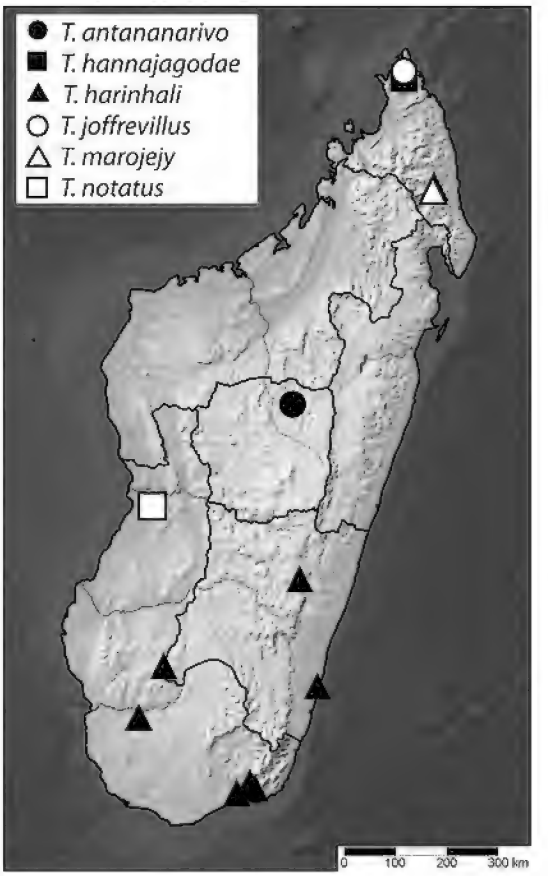
– Body length ≥20 mm; dark orange-brown or dark orange-red; postclypeus medially depressed (pl. 13B); pronotal transverse suture incomplete, divided by paramedian ridges (pl. 15B)..... *mahafaly*, new species

14. Pronotal transverse suture complete, not divided by paramedian ridges 15

– Pronotal transverse suture incomplete, divided by paramedian ridges (pl. 15B) 18

15. Red and black, pale red and brown, or uniformly dark coloration; anterior pronotal lobe with very small anterolateral projections (pl. 15B); forefemora slender 16

– Dull orange with hind femur distally and hind tibia distally black; anterior pronotal lobe without distinct anterolateral projections; forefemora moderately incrassate .... *notatus*, new species



MAP 6. Localities of *Tanindrazanus antananarivo*, *T. hannajagodae*, *T. harinhali*, *T. joffrevillus*, *T. marojejy*, and *T. notatus*.

16. Synthlipsis width less that two times width of eye; pale red and brown or uniformly dark brown to blackish coloration..... 17

– Synthlipsis width two times width of eye; red and black..... *kathrynae*, new species

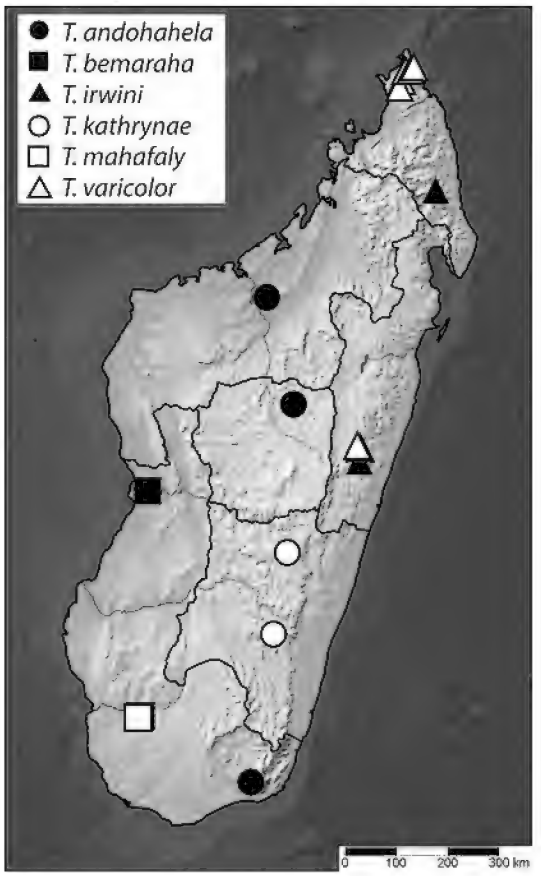
17. Synthlipsis width about 1.25 times width of eye; uniformly dark brown to blackish coloration..... *simulans*, new species

– Synthlipsis about width of eye; pale red and brown ..... *antananarivo*, new species

18. Black and pale or tricolored; forefemora slightly to moderately incrassate..... 19

– Bright orange and black; forefemora slender . ..... *varicolor*, new species

19. Anterior pronotal lobe with very small anterolateral projections (pl. 15B); sternal interseg-



MAP 7. Localities of *Tanindrazanus andohahela*, *T. bemaraha*, *T. irwini*, *T. kathrynae*, *T. mahafaly*, and *T. varicolor*.

mental sutures carinulate between II–IV; black and pale . . . . . *nigripes*, new species

– Anterior pronotal lobe without distinct anterolateral projections; sternal intersegmental sutures carinulate between II–VI and laterally between VI and VII; tricolored, dark brown, dull orange, and pale. . . . . *harinhali,* new species

Tanindrazanus amboasaricus, new species
Plates 2, 6, 9; map 9

Diagnosis: Males are recognized among other species in *Tanindrazanus* by a combination of the following characters: the distinct coloration, synthlipsis about the width of the eye, eye reaching the dorsal and ventral head margins, and the pronotal transverse furrow not continuous. This species is similar to *T. harinhali*, from which it differs by the larger body size; dark brown to blackish head, pronotum, and scutellum; the width of the synthlipsis about the width of an eye; and intersegmental sutures carinulate between sternites II–V.

Description: Medium body size (length: 16.05 mm, holotype; 14.30–16.05 mm). COLORATION: Dark brown with labrum, basal half of scapus, costal margin, and tarsi light brown. Antennifers apically, basal part of hemelytra, trochanters, basal half of femora, and tibiae medially yellowish. Tarsomere III on forelegs with dark brown band in apical part. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; postocular narrow in dorsal view (pl. 13A); synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); eyes about one-third of head length, reaching dorsal and ventral head surfaces; ocelli large, separated by less than half of diameter of ocellus, located on distinct median tubercle (pl. 13H); pedicel about one-fifth longer than scape; labial segment III subequal to II. Thorax: Anterior pronotal lobe without anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); legs slender; tarsomeres I and II combined subequal to III on fore- and mid legs, longer on hind legs; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–V; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion tonguelike, apically expanded and rounded.

Etymology: The species epithet is a noun in apposition and is named after the type locality Amboasary, Madagascar.

DISTRIBUTION: Ambovombe in the Amboasary District of the Toliara province (map 9).

DISCUSSION: The coloration on the dorsal surface of the pronotum is sometimes dark brown.

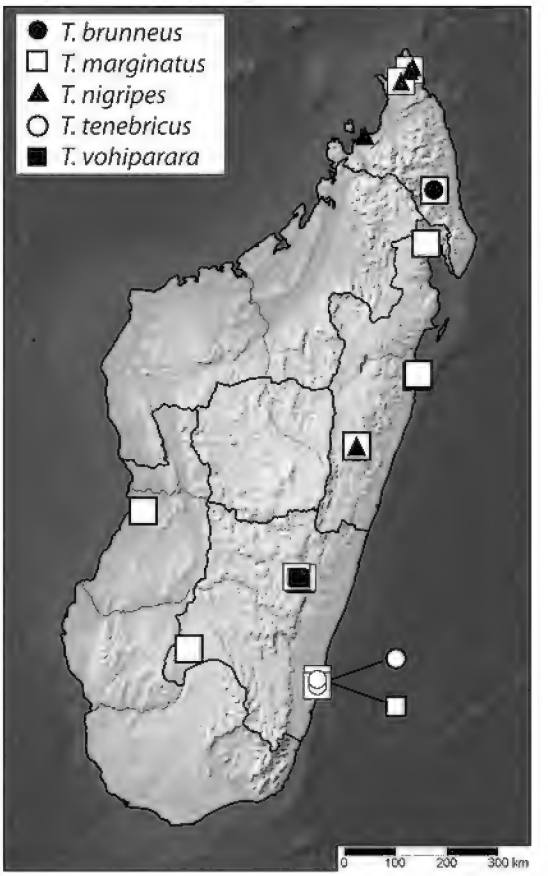
HOLOTYPE: Male: **Madagascar: Toliara:** Amboasary District, Ambovombe, 25.17201°S 46.08971°E, 131 m, 19 Jun 1957, P. Griveaud (MNHN).

PARATYPES: **Madagascar: Toliara:** Amboasary District, Ambovombe, 25.17201°S 46.08971°E, 131 m, 19 Jun 1957, P. Griveaud, 3♂ (MNHN).

***Tanindrazanus andohahela*,** new species
Plates 2, 6, 9; map 7

DIAGNOSIS: Males recognized among other species in this genus by the longer labial segment II relative to III and slightly incrassate forefemur. This species is similar to *T. bemaraha*, but the shorter labial segment III and lack of anterolateral protuberances on the anterior pronotal lobe distinguish *T. andohahela* from *T. bemaraha*. This species is also similar to *T. notatus*, but differs from it by the slightly incrassate forefemur and lack of black markings on the hind legs.

DESCRIPTION: Medium body size (length: 11.10 mm, holotype; 10.34–11.10 mm). COLORATION: Orange with antennal segments III–IV and basal half of V dark brown, hemelytron basally (except corium) brown, and antennal segment V apically and VI white. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-third longer than scape; labial segment III shorter than II. THORAX: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; forefemur slightly incrassate; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion elongate subquadrate (pl. 21G).



MAP 8. Localities of *Tanindrazanus brunneus*, *T. marginatus*, *T. nigripes*, *T. tenebricus*, and *T. vohiparara*.

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Parc National d'Andohahela, Madagascar.

DISTRIBUTION: Antananarivo, Mahajanga, and Toliara provinces (map 7).

MAP 9. Localities of *Tanindrazanus amboasaricus*, *Ta. anjozorobeus*, and *Toliarus* (*To.*) species.

HOLOTYPE: Male: **Madagascar: Toliara:** Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 16 Dec 2002–26 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala (00044865) (CAS).

PARATYPES: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 17 Oct 2003–24 Oct 2003, M. Irwin, R. Harin'Hala, 1♂ (00006126) (BMNH), 1♂ (00045559) (USNM); 28 Dec 2003–10 Jan 2004, M. Irwin, R. Harin'Hala, 1♂ (00006093) (UCR); 10 Jan 2004–20 Jan 2004, M. Irwin, R. Harin'Hala, 1♂ (00007177) (CAS), 1♂ (00045466) (SU). **Mahajanga:** 160 km N of Maevatanana on RN 04, Ampijoroa National Park, 16.31933°S 46.81333°E, 43 m, 07 Feb 2005–19 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045044) (CAS). **Unknown:** 2♂ (00044823, 00044877) (CAS).

***Tanindrazanus anjozorobeus*,** new species
Plates 2, 6; map 9

DIAGNOSIS: Males are recognized among other *Tanindrazanus* species by the tricolor body (red, orange, and brown coloration), elevated clypeal apex relative to the labrum, synthlipsis smaller than the width of the eye, and broad postocular in dorsal view. This species is very similar to *T. kathrynae*, but it can be easily distinguished by the larger body size, small width of the synthlipsis, larger eyes that surpass the dorsal and ventral margins of the head in lateral view, very large ocelli separated by less than one-third of the diameter of an ocellus, and lack of anterolateral projections on the pronotum.

DESCRIPTION: Large body size (length: 17.32 mm, holotype; 16.20–17.32 mm). COLORATION: Red with pale orange-brown mandibular and maxillary plates, clypeus, dorsal postocular near ocellar tubercle, labium, anterior pronotal lobe except lateral margins, tibiae except apically, and corium except distally. Remainder of head, lateral margins of anterior pronotal lobe, anterior part of propleura, meso- and metapleura, scutellum, corium distally, forewing membrane, femora and apical part of tibiae, ventrolateral spot on abdominal sternites II–V, and pygophore dark brown to black. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis smaller than the width of eye; interocular sulcus posterior to hind margin of eye; postocular broad in dorsal view (pl. 13A); ocelli very large, separated by less than one-third diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, distinctly surpassing dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe without anterolateral projections; posterior pronotal lobe smooth; pronotal transverse furrow con-

tinuous; legs slender; tarsomeres I and II combined subequal to III; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–V and laterally between V and VI; pygophore process subtriangular in lateral view (pl. 20H, I); BPE longer than basal plate; area of endosomal struts–DPS fusion ovate.

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality Anjozorobe, Madagascar.

DISTRIBUTION: Anjozorobe in the Antananarivo province (map 9).

DISCUSSION: Coloration varies with the pronotal longitudinal furrow either light brown or entirely black and the abdominal sternites dark brown.

HOLOTYPE: Male: **Madagascar: Antananarivo:** Anjozorobe District, Anjozorobe, 18.2619°S 47.6849°E, 1091 m, Dec 1938 (MNHN).

PARATYPES: **Madagascar: Antananarivo:** Anjozorobe District, Anjozorobe, 18.2619°S 47.6849°E, 1091 m, Dec 1938, 3♂ (MNHN).

Tanindrazanus antananarivo, new species
Plates 2, 6, 9; map 6

DIAGNOSIS: Males recognized among other *Tanindrazanus* species by a combination of the following characters: the dark brown color with pale red abdomen, synthlipsis about the width of the eye, eye not reaching the dorsal and ventral head margins, and continuous pronotal transverse furrow. This species is similar to *T. marginatus* and *T. tenebricus*, but is easily distinguished by the dark brown and pale red color pattern and intersegmental sutures carinulate between sternites II–V and laterally between V and VI.

DESCRIPTION: Medium body size (length: 12.52 mm, holotype; 12.41–14.00 mm). COLORATION: Dark brown with light brown clypeus, antennifer except apically, postocular and neck dorsomedially, head posteroventrally, anteocular laterally and ventrally, labium, basal half of antennal segment V, anterior margin of pronotum, prosternum, corium basally, coxae, trochanters, femora basally, tibiae apically, and tarsi. Meso- and metasterna medially and abdomen, except pygophore, pale red. Distal half of antennal segment V and segments VI and VII white. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; postocular narrow in dorsal view (pl. 13A); synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); eyes about one-third of head length, not reaching dorsal and ventral head surfaces; ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); pedicel about one-fourth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III on fore- and mid legs, longer on hind legs; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–V and laterally between V and VI; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality province Antananarivo, Madagascar.

DISTRIBUTION: Northern region of Antananarivo province (map 6).

DISCUSSION: The dorsal surface of the antennifers and postclypeus are light brown in some specimens.

HOLOTYPE: Male: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 16 Jan 2005–27 Jan 2005, M. Irwin, R. Harin'Hala (00006330) (CAS).

PARATYPES: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 24 Oct 2003–31 Oct 2003, M. Irwin, R. Harin'Hala, 1♂ (00005367) (CAS); 07 Nov 2003–15 Nov 2003, M. Irwin, R. Harin'Hala, 1♂ (00006334) (CAS); 22 Nov 2003–29 Nov 2003, M. Irwin, R. Harin'Hala, 1♂

(00006333) (CAS); 01 Nov 2004–14 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00006336) (CAS); 07 Dec 2004–22 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00006335) (CAS); 22 Dec 2004–06 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00006083) (BMNH); 16 Jan 2005–27 Jan 2005, M. Irwin, R. Harin'Hala, 2♂ (00006331, 00006332) (USNM); 23 Mar 2005–03 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00006958, 00006959) (UCR); 03 Apr 2005–17 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00006127) (SU).

Tanindrazanus bemaraha, new species

Plates 2, 6, 9; map 7

DIAGNOSIS: Males are recognized among other species in *Tanindrazanus* by the longer labial segment II relative to III, anterior pronotal lobe with very small anterolateral protuberances, and anterior pronotal lobe slightly carinate laterally. This species is similar to *T. andohahela* and *T. notatus*, but differs from both species by the presence of the anterolateral protuberances and laterally carinate anterior pronotal lobe. *Tanindrazanus bemaraha* is further distinguished from *T. notatus* by the lack of black markings on the hind femur and tibia and longer labial segment II.

DESCRIPTION: Medium body size (length: 13.93 mm, holotype; 13.07–13.93 mm). COLORATION: Orange-brown with dark brown scape except basally, pedicel, and antennal segments III and IV, as well as V basally. Antennal segment V apically and segments VI and VII pale. Wing membrane and distal wing veins brown. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-third longer than scape; labial segment III shorter than II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B), slightly carinate laterally; posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III on mid and hind tarsi, foretarsi missing; wings spread out in specimens. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion elongate subquadrate (pl. 21G).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Tsingy de Bemaraha National Park, Madagascar.

DISTRIBUTION: Tsingy de Bemaraha National Park in the Mahajanga province (map 7).

HOLOTYPE: Male: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 10.6 km ESE 123° Antsalova, 19.70944°S 44.71806°E, 150 m, 16 Nov 2001–20 Nov 2001, Fisher et al. (00006473) (CAS).

PARATYPE: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 10.6 km ESE 123° Antsalova, 19.70944°S 44.71806°E, 150 m, 16 Nov 2001–20 Nov 2001, Fisher et al., 1♂ (00005362) (CAS).

Tanindrazanus brunneus, new species

Plates 2, 6, 9; map 8

DIAGNOSIS: Males recognized among other species in this genus by the very elongate subtriangular (almost cylindrical) head in lateral view, postclypeal depression extending to interocular sulcus, broad postocular in dorsal view, synthlipsis about 2.5 width of an eye, eyes about one-fifth of the head length, and small ocelli on a shallower ocellar tubercle. This species is similar to *T. joffrevillus*, but is distinguished by the preceding characters, labial segment II longer than III, striated posterior pronotal lobe, and slender legs.

DESCRIPTION: Medium body size (length: 10.31 mm, holotype). COLORATION: Orange with pale thoracic pleura and sterna and brown pronotum and wing membrane. Scape, pedicel,

antennal segments III and IV, as well as segment V basally and segment VII apically, dark brown. Antennal segment V apically, segment VI, and base of segment VII white. VESTITURE: As in generic description. STRUCTURE: Head: Elongate; ventrally flat; clypeal apex not elevated relative to labrum (pl. 13C–F, I–K); postclypeus with very shallow, narrow medial longitudinal depression to interocular sulcus; synthlipsis about 2.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli relatively small, separated by less than diameter of ocellus, located on shallow medial tubercle (pl. 13G); eyes about one-fifth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III shorter than II. Thorax: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); legs slender; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process very flattened in lateral view (pl. 20F); BPE as long as basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

Etymology: The species epithet is an adjective in the nominative case and is named for the color of the body.

Distribution: The only known specimen was collected from Marojejy Nature Reserve in the Antsiranana province (map 8).

Holotype: Male: **Madagascar**: **Antsiranana**: R.N.I. de Marojejy, 10.0 km NW Manantenina, 14.43333°S 49.76167°E, 750 m, 15 Oct 1996–22 Oct 1996, E. Quinter and T. Nguyen (00078368) (AMNH).

***Tanindrazanus hannajagodae*,** new species
Plates 2, 6, 9; map 6

Diagnosis: Males are recognized among other *Tanindrazanus* species by the large body size, red and black coloration, flat ventral head surface, labial segment II shorter than III, laterally carinate anterior pronotal lobe, slightly incrassate forefemur, and intersegmental sutures carinulate between sternites II and III and laterally between III–V. This species is similar to *T. marojejy*, *T. mahafaly*, and *T. irwini*, but can be separated from the features mentioned, in particular the coloration and sternal intersegmental carinulation pattern.

Description: Large body size (length: 23.39 mm, holotype; 22.47–23.69 mm). COLORATION: Red with black antenna (except pedicel basally, apical half of segment V, and segment VI), posterior pronotal margin, scutellar processes apically, hemelytron except base of corium, trochanters, femora basally, and posterolateral stripes on abdominal sternites III–VI. Hind tibia dark red and distal half of antennal segment V and segment VI white. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally flat; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III longer than II. Thorax: Anterior pronotal lobe without distinct anterolateral projections, laterally carinate; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur slightly incrassate; tarsomeres I and II combined shorter than III on fore- and mid legs, subequal on hind legs; hemelytron reaching or surpassing abdominal apex. Abdomen: Apex rounded or notched medially; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II and III and laterally between III–V; pygophore process subtriangular in lateral view (pl.

20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion circular.

Etymology: The species epithet is a noun in the genitive case and is named after the second author's daughter, Hanna Jagoda Chłond.

Distribution: Northern region of the Antsiranana province (map 6).

Discussion: The coloration is variable with the hind femur dark red, the ventral intersegmental sutures black, and the hemelytron light brown in some specimens.

Holotype: Male: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.45°S 49.23333°E, 426 m, 11 Feb 2007–18 Feb 2007, M. Irwin, R. Harin'Hala (00006261) (CAS).

Paratypes: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.45°S 49.23333°E, 426 m, 20 Jan 2007–27 Jan 2007, M. Irwin, R. Harin'Hala, 1♂ (00006263) (SU); 11 Feb 2007–18 Feb 2007, M. Irwin, R. Harin'Hala, 1♂ (00006262) (UCR). Réserve Spéciale d'Ambre, 3.5 km 235° SW Sakaramy, 12.46888°S 49.24222°E, 325 m, 26 Jan 2001–31 Jan 2001, Fisher et al., 1♂ (00006117) (CAS).

Tanindrazanus harinhali, new species

Plates 2, 6, 9; map 6

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the distinct tricolor pattern (dark brown, orange, and pale yellow), synthlipsis about 1.5 times the width of the eye, eye not reaching the dorsal and ventral head margins, ocelli separated by diameter of ocellus, and the pronotal transverse furrow not continuous. This species is similar to *T. amboasaricus*, but differs by the smaller body size; orangish head, pronotum, and scutellum; greater synthlipsis width; and intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII.

Description: Medium body size (length: 10.99 mm, holotype; 10.39–11.89 mm). COLORATION: Dark brown with pale yellow mandibular and maxillary plates, postclypeus, antennifer dorsally, scape basally, scutellum medially, corium basally, coxae, trochanters, fore- and mid femora except dorsally, hind femur except apically, foretibia, mid tibia except apically, hind tibia medially, tarsi, laterotergites except posterior half of VII, ventrolateral stripes on abdominal sternites III and IV, lateral margins of sternites II–VI, and anterolateral area of VII, labial segment II basally, labial segment IV, prothorax, and dorsal half of mesopleuron orange. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. Thorax: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur slightly incrassate; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20H, I); BPE shorter than basal plate; area of endosomal struts–DPS fusion elongate ovoid.

Etymology: The species epithet is a noun in the genitive case and is named after Rasolondalao Harin'Hala Hasinjaka, who helped collect a majority of the specimens examined for this species.

Distribution: Fianarantsoa and Toliara provinces (map 6).

Discussion: The yellow coloration on the head, legs, and stripes on the abdominal sternites may be reduced in size or absent, and the clypeus, posteroventral head surface, and dorsomedial neck surface may be yellow. Approximately half of the specimens examined have the DFLA subdivided into two pseudosegments instead of three among and within individuals.

HOLOTYPE: Male: **Madagascar: Toliara:** Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 28 Nov 2001–04 Dec 2001, R. Harin'Hala (00006418) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 03 Mar 2007–10 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044892) (CAS). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 16 Oct 2001–08 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00006425) (CAS); 09 Aug 2005–25 Aug 2005, M. Irwin, R. Harin'Hala, 1♂ (00006537) (UCR). Radio tower 22 km SW of Ilakaka, near Fianarantsoa/Toliara border, 22.77917°S 45.025°E, 1100 m, 06 Mar 2002–11 Mar 2002, M. Irwin, R. Harin'Hala, 1♂ (00006340) (CAS). **Toliara:** Andohahela Natl Park, Tsimelahy, Parcelle II, 24.93683°S 46.62666°E, 180 m, 27 Dec 2002–06 Jan 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006391) (CAS); 06 Jan 2003–16 Jan 2003, R. Harin'Hala, 1♂ (00006376) (CAS), 1♂ (00006377) (USNM); 08 Mar 2003–18 Mar 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006337, 00006344) (SU); 28 Mar 2003–08 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006552) (CAS); 22 Jun 2003–29 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006375) (AMNH); 17 Aug 2003–24 Aug 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006554) (UCR); 09 Nov 2003–20 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006551) (CAS). Berenty Special Reserve, 8 km NW Amboasary, 25.00666°S 46.30333°E, 85 m, 25 Oct 2002–26 Oct 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006340) (CAS); 26 Oct 2002–02 Nov 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006349) (CAS), 1♂ (00006357) (BMNH); 30 Nov 2002–07 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00005359) (SU), 3♂ (00006353–00006355) (CAS); 26 Jan 2003–05 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006529) (UCR); 24 Mar 2003–03 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006532, 00045392) (AMNH); 03 May 2003–14 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006374) (CAS); 22 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006534) (BMNH); 07 Dec 2003–14 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006541, 00006542) (USNM); 02 Jan 2004–13 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006547) (CAS); 23 Jan 2004–04 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006543, 00006546) (MNHN); 04 Feb 2004–15 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006528, 00006536) (AMNH); 15 Feb 2004–02 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006358) (SU); 27 May 2004–06 Jun 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006544, 00006545) (CAS); 06 Jun 2004–20 Jun 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006533, 00006553) (USNM); 22 Aug 2004–01 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006530) (UCR). Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 21 Dec 2003–01 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006346) (CAS); 02 Jan 2004–13 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006359) (UCR); 24 Mar 2004–04 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006549, 00006550) (CAS); 04 Apr 2004–15 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006531) (SU); 23 Jun 2004–04 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006350, 00006351) (AMNH); 04 Jul 2004–18 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006356) (CAS). Beza Mahafaly Reserve, Parcelle II near Bellevue, 23.68983°S 44.5755°E, 180 m, 10 Nov 2001–21 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00006424) (MNHN); 18 Dec 2001–25 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00006426) (SU); 16 Jan 2002–18 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00006385) (CAS); 08 Feb 2002–15 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00006540) (UCR). Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 15 Oct 2001–10 Nov 2001, M.E. Irwin, F.D. Parker, R. Harin'Hala, 1♂ (00006387) (CAS); 10 Nov 2001–21 Nov 2001, R. Harin'Hala, 1♂ (00006557) (UCR); 21 Nov 2001–28 Nov 2001, R. Harin'Hala, 2♂ (00006341, 00006392) (CAS); 28 Nov 2001–04 Dec 2001, R. Harin'Hala, 1♂ (00006417) (CAS); 04 Dec 2001–11 Dec 2001, R. Harin'Hala, 2♂ (00006345, 00006415) (SU); 11 Dec 2001–18 Dec 2001, R. Harin'Hala, 2♂ (00006132, 00006379) (AMNH); 18 Dec 2001–25 Dec 2001, R. Harin'Hala, 1♂ (00006388) (CAS); 25 Dec 2001–02 Jan 2002, R. Harin'Hala, 1♂ (00006548) (BMNH); 18 Jan 2002–25 Jan 2002, M.E. Irwin, F.D. Parker, R. Harin'Hala, 1♂ (00045278) (BMNH); 25 Jan 2002–01 Feb 2002, R. Harin'Hala, 2♂ (00006389, 00006390) (USNM); 08 Feb 2002–15 Feb 2002, R. Harin'Hala, 2♂ (00006342, 00006402) (CAS); 14 Mar 2002–22 Mar 2002, R. Harin'Hala, 1♂ (00006420) (CAS); 29 Mar 2002–10 Apr 2002, R. Harin'Hala, 1♂ (00006555) (CAS); 29 Apr 2002–19 May 2002, R. Harin'Hala, 1♂ (00006386) (CAS); 19 May 2002–08 Jun 2002, R. Harin'Hala, 1♂ (00006401) (CAS); 08 Jun 2002–18 Jun 2002, R. Harin'Hala, 2♂ (00006421, 00006423) (BMNH); 18 Jun 2002–28 Jun 2002, R. Harin'Hala, 1♂ (00006393) (CAS); 07 Jul 2002–18 Jul 2002, R. Harin'Hala, 1♂ (00006412) (CAS); 28 Jul 2002–09 Aug 2002, R. Harin'Hala, 1♂ (00006338) (CAS); 09 Aug 2002–16 Aug 2002, R. Harin'Hala, 1♂ (00006427) (CAS); 16 Aug 2002–28 Aug 2002, R. Harin'Hala, 2♂ (00006403, 00006404) (USNM); 09 Sep

2002–20 Sep 2002, R. Harin'Hala, 1♂ (00006414) (CAS); 20 Sep 2002–05 Oct 2002, R. Harin'Hala, 1♂ (00006422) (UCR); 20 Oct 2002–28 Oct 2002, R. Harin'Hala, 1♂ (00006380) (CAS); 28 Oct 2002–10 Nov 2002, M.E. Irwin, F.D. Parker, R. Harin'Hala, 2♂ (00006409, 00006410) (BMNH); 02 Dec 2002–12 Dec 2002, R. Harin'Hala, 2♂ (00006347, 00006348) (CAS); 12 Dec 2002–17 Dec 2002, R. Harin'Hala, 1♂ (00006378) (CAS); 17 Dec 2002–20 Dec 2002, R. Harin'Hala, 1♂ (00006419) (CAS); 20 Dec 2002–24 Dec 2002, R. Harin'Hala, 1♂ (00006095) (CAS); 24 Dec 2002–02 Jan 2003, R. Harin'Hala, 1♂ (00006413) (AMNH); 09 Jan 2003–23 Jan 2003, R. Harin'Hala, 4♂ (00006405–00006408) (CAS); 23 Jan 2003–04 Feb 2003, R. Harin'Hala, 5♂ (00006395–00006399) (MNHN); 04 Feb 2003–16 Feb 2003, R. Harin'Hala, 1♂ (00006400) (SU); 16 Feb 2003–02 Mar 2003, R. Harin'Hala, 1♂ (00006556) (BMNH); 13 Mar 2003–23 Mar 2003, R. Harin'Hala, 2♂ (00006381, 00006382) (USNM); 23 Mar 2003–02 Apr 2003, R. Harin'Hala, 1♂ (00006339) (CAS); 02 Apr 2003–10 Apr 2003, R. Harin'Hala, 1♂ (00006352) (CAS); 29 Apr 2003–07 May 2003, R. Harin'Hala, 1♂ (00006416) (UCR). Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 06 May 2003–13 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006343) (SU); 29 Jun 2003–06 Jul 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044843) (UCR); 03 Aug 2003–13 Aug 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00044809, 00044837) (CAS). **Unknown:** 5♂ (00006383, 00006384, 00006535, 00006538, 00006539) (CAS).

Tanindrazanus irwini, new species

Plates 2, 6, 9, 15F; map 7

Diagnosis: Males are recognized among other species in *Tanindrazanus* by the large body size, black coloration with orange markings, flat ventral head surface, labial segment II shorter than III, laterally carinate anterior pronotal lobe, slender legs, and intersegmental sutures carinulate between sternite II–IV and laterally between IV–VI. This species is similar to *T. varicolor*, but differs by the larger body size, flat ventral head surface, labial segment II shorter than III, laterally carinate anterior pronotal lobe, and intersegmental sutures carinulate between sternite II–VI and laterally between VI and VII.

Description: Large body size (length: 22.76 mm, holotype; 18.95–22.76 mm). COLORATION: Dark brown-black with bright orange head dorsally, scape, labium except segment II basally, scutellum medially, hemelytron except posteromedial spot, femora apically, tibiae, tarsi, laterotergites II–V, anterior half of laterotergite VI, sternites III–V, and anterior half of sternite VI except posterolateral stripes. Distal half of antennal segment V and segments VI and VII white. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally flat; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III longer than II. Thorax (pl. 15F): Anterior pronotal lobe without distinct anterolateral projections, laterally carinate; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); legs slender; tarsomeres I and II combined subequal to III; hemelytron reaching or surpassing abdominal apex. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternite II–IV and laterally between IV–VI; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

Etymology: The species epithet is a noun in the genitive case and is named after Mike Irwin, who helped collect a majority of the specimens examined for this species.

Distribution: Marojejy Nature Reserve in the Antsiranana province and near the Andasibe-Mantadia National Park in the Toamasina province (map 7).

Discussion: Coloration is variable with the orange areas reduced or absent on the dorsal head surface, labium, scutellum, femora, hind tibia, and abdomen in some specimens.

HOLOTYPE: Male: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 30 May 2005–11 Jun 2005, M. Irwin, R. Harin'Hala (00045088) (CAS).

PARATYPES: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 09 Dec 2004–15 Dec 2004, M. Irwin, R. Harin'Hala, 2♂ (00045220, 00045375) (CAS); 25 Dec 2004–30 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00006224) (SU), 1♂ (00006225) (UCR); 05 Jan 2005–10 Jan 2005, M. Irwin, R. Harin'Hala, 2♂ (00006096, 00006097) (CAS); 10 Jan 2005–15 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00006235) (UCR); 15 Jan 2005–26 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00006135) (AMNH); 04 Feb 2005–11 Feb 2005, M. Irwin, R. Harin'Hala, 3♂ (00006233, 00006234, 00006239) (CAS); 11 Feb 2005–18 Feb 2005, M. Irwin, R. Harin'Hala, 3♂ (00006217, 00006241, 00006242) (AMNH); 18 Feb 2005–25 Feb 2005, M. Irwin, R. Harin'Hala, 3♂ (00045603, 00045612, 00045712) (BMNH); 25 Feb 2005–04 Mar 2005, M. Irwin, R. Harin'Hala, 5♂ (00005366, 00006226–00006229) (CAS); 11 Mar 2005–18 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00006232) (UCR); 04 Apr 2005–16 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00006499, 00045339) (SU); 16 Apr 2005–28 Apr 2005, M. Irwin, R. Harin'Hala, 6♂ (00007087, 00045004, 00045048, 00045072, 00045405, 00045475) (CAS); 28 Apr 2005–07 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00006221) (UCR); 07 May 2005–18 May 2005, M. Irwin, R. Harin'Hala, 3♂ (00006134, 00006237, 00006238) (USNM); 18 May 2005–30 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00006216) (BMNH), 1♂ (00006243) (USNM); 30 May 2005–11 Jun 2005, M. Irwin, R. Harin'Hala, 4♂ (00007211, 00044957, 00044982, 00045462) (CAS); 28 Jun 2005–13 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00006218) (SU), 1♂ (00006222) (UCR), 4♂ (00006223, 00006230, 00006231, 00006236) (MNHN), 4♂ (00006240, 00006452–00006454) (CAS). **Toamasina:** Lakato env. Near Andasibe-Mantadia National Park, 19.18651°S 48.43856°E, 635 m, 09 Jan 2007–10 Jan 2007, Z. Mráček, 1♂ (MMBC).

Tanindrazanus joffrevillus, new species

Plates 2, 6, 9; map 6

DIAGNOSIS: Males recognized among other species in this genus by the dull orange coloration, ventrally flat head surface, clypeal apex not elevated relative to the labrum, smooth posterior pronotal lobe, and slightly incrassate forefemur. This species is similar to *T. andohahela*, but is distinguished by dark brown corium, ventrally flat head surface, clypeal apex not elevated relative to the labrum, larger synthlipsis width, subequal lengths of labial segments II and III, smooth posterior pronotal lobe, divided pronotal transverse suture, and intersegmental sutures carinulate between sternites II–VI.

DESCRIPTION: Medium body size (length: 11.19 mm, holotype). COLORATION: Dull orange with thoracic sterna pale and hemelytron, except corium basally, brown. Antennal segments V and VI white. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally flat; clypeal apex not elevated relative to labrum (pl. 13C–F, I–K); postclypeus with relatively shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eyes about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal II. THORAX: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur slightly incrassate; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI; pygophore process very flattened in lateral view (pl. 20F); BPE as long as basal plate; area of endosomal struts–DPS fusion elongate subquadrate (pl. 21G).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Joffreville, Madagascar.

DISTRIBUTION: Only one of the two known specimens has locality data. It is known from a locality north of Joffreville in the Antsiranana province (map 6).

HOLOTYPE: Male: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.33333°S 49.25°E, 360 m,

20 Mar 2001–07 Apr 2001, M. Irwin, R. Harin'Hala (00007256) (CAS).

PARATYPES: **Unknown,** 1♂ (00044998) (CAS).

Tanindrazanus kathrynae, new species
Plates 2, 6, 9, 13G, 15D, 19F, 20G; map 7

DIAGNOSIS: Males recognized among other *Tanindrazanus* species by the red and black coloration, elevated clypeal apex relative to the labrum, broad postocular in dorsal view, and synthlipsis about two times the width of the eye. This species is very similar to *T. anjozorobeus*, but is distinguished by the smaller body size, smaller eyes that do not surpass the dorsal and ventral margins of the head in lateral view, larger width of the synthlipsis, and the very small anterolateral projections on the pronotum.

DESCRIPTION: Medium body size (length: 12.67 mm, holotype; 11.62–12.67 mm). COLORATION: Red with pale orange-brown mandibular and maxillary plates, clypeus, anterolateral and dorsal margin of eye, labium, anterior pronotal lobe except lateral margins, and corium except distally. Remainder of head except two paramedian dorsal stripes posterior to ocelli, lateral margins of anterior pronotal lobe, anterior part of propleura, meso- and metapleura, scutellum, corium distally, forewing membrane, femora and apical one-third to one-half of fore- and mid tibiae, hind tibiae except small apical part, ventrolateral spot on abdominal sternites II–VI, and pygophore dark brown to black. VESTITURE: As in generic description. STRUCTURE: HEAD (pl. 13G): Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum; postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; postocular broad in dorsal view (pl. 13B); ocelli large, separated by less than diameter of ocellus, located on slightly elevated median tubercle; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about two-fifths longer than scape; labial segment III subequal to II. THORAX (pl. 15D): Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–V and laterally between V and VI; pygophore process subtriangular in lateral view (pl. 20G); BPE longer than basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

ETYMOLOGY: The species epithet is a noun in the genitive case and is named in memoriam of the senior author's partner's mother, Kathryn Carroll.

DISTRIBUTION: Miandritsara Forest in the Fianarantsoa province (map 7).

DISCUSSION: In some specimens, the head and anterior pronotal lobe have reduced red coloration or are entirely black and the median longitudinal suture on the pronotum and the medial area of abdominal sternite VII are black.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Miandritsara Forest, 40 km S Ambositra, 20.79266°S 47.17566°E, 825 m, 13 Nov 2006–22 Nov 2006, M. Irwin, R. Harin'Hala (00006103) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Andringitra Est, Ambalamarovandana, 22.22595°S 46.93418°E, 1500–1600m, 15 Jan 1971–25 Jan 1971, 1♂ (MNHN). Miandritsara Forest, 40 km S Ambositra, 20.79266°S 47.17566°E, 825 m, 23 Oct 2004–03 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00045053) (UCR); 05 Jan 2005–18 Jan 2005, M. Irwin, R. Harin'Hala, 2♂ (00044858, 00045506) (CAS), 1♂ (00045608) (SU); 09 Feb 2005–22 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045383) (AMNH); 22 Feb 2005–05 Mar 2005, M. Irwin, R. Harin'Hala, 2♂ (00044863, 00045360) (CAS), 1♂ (00045626) (USNM); 13 Apr 2005–27 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00007062, 00044984) (CAS), 1♂ (00045549) (MNHN); 05 Jan 2006–12 Jan 2006, M. Irwin, R. Harin'Hala, 2♂ (00044818, 00045566) (BMNH); 16 Feb 2006–27 Feb 2006, M. Irwin, R. Harin'Hala, 1♂ (00044832) (BMNH); 27 Feb 2006–08 Mar 2006, M. Irwin, R. Harin'Hala, 1♂ (00045632) (SU); 14 Apr 2006–02 May 2006, M. Irwin, R. Harin'Hala, 2♂ (00006094, 00006298) (CAS), 1♂

(00006312) (MNHN); 13 Nov 2006–22 Nov 2006, M. Irwin, R. Harin'Hala, 2♂ (00006293, 00006299) (AMNH); 01 Dec 2006–10 Dec 2006, M. Irwin, R. Harin'Hala, 1♂ (00006302) (UCR); 10 Dec 2006–19 Dec 2006, M. Irwin, R. Harin'Hala, 2♂ (00006313, 00006314) (CAS); 19 Dec 2006–28 Dec 2006, M. Irwin, R. Harin'Hala, 4♂ (00007053, 00007202, 00045201, 00045365) (CAS); 15 Jan 2007–24 Jan 2007, M. Irwin, R. Harin'Hala, 2♂ (00045083, 00045482) (CAS); 24 Jan 2007–31 Jan 2007, M. Irwin, R. Harin'Hala, 1♂ (00006294) (BMNH); 31 Jan 2007–11 Feb 2007, M. Irwin, R. Harin'Hala, 2♂ (00006315, 00006316) (SU); 11 Feb 2007–20 Feb 2007, M. Irwin, R. Harin'Hala, 1♂ (00006301) (MNHN), 3♂ (00006309–00006311) (CAS); 20 Feb 2007–27 Feb 2007, M. Irwin, R. Harin'Hala, 1♂ (00006297) (USNM); 08 Mar 2007–17 Mar 2007, M. Irwin, R. Harin'Hala, 4♂ (00006303–00006306) (CAS); 17 Mar 2007–26 Mar 2007, M. Irwin, R. Harin'Hala, 1♂ (00006300) (AMNH); 26 Mar 2007–05 Apr 2007, M. Irwin, R. Harin'Hala, 2♂ (00006307, 00006308) (USNM); 05 Apr 2007–14 Apr 2007, M. Irwin, R. Harin'Hala, 2♂ (00006295, 00006296) (UCR).

Tanindrazanus mahafaly, new species

Plates 3, 6, 9; map 7

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the large body size, distinct dark orange-brown to red-orange coloration, labial segment II shorter than III, slightly incrassate forefemur, and only the intersegmental suture between sternites II and III carinulate. This species is similar to *T. irwini*, from which it differs by the dark orange-red color pattern, anteromedially depressed ventral head surface, and carinulation pattern on the sternal intersegmental sutures.

Description: Large body size (length: 19.57 mm, holotype; 18.03–19.92 mm). COLORATION: Dark orange with apical half of pedicel and basiflagellomere, anterior pronotal lobe, metapleuron, and abdomen, except laterotergites, dark reddish brown. Hemelytron bright orange and antennal segments VI and VII pale orange to white. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III longer than II. Thorax: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur slightly incrassate; tarsomeres I and II combined subequal to III on fore- and mid legs, longer on hind legs; wings spread in specimens. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate; area of endosomal struts–DPS fusion circular.

Etymology: The species epithet is a noun in apposition and is named after the type locality, Beza Mahafaly Reserve, Madagascar.

Distribution: Beza Mahafaly Reserve in the Toliara province (map 7).

Discussion: In some specimens, the head, scutellum, fore- and mid legs, and abdomen are bright red-orange, while the remaining structures are dull orange.

Holotype: Male: **Madagascar: Toliara:** Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 15 Oct 2001–10 Nov 2001, M. Irwin, F. Parker, R. Harin'Hala (00045290) (CAS).

Paratypes: **Madagascar: Toliara:** Beza Mahafaly Reserve, Parcelle II near Bellevue, 23.68983°S 44.5755°E, 180 m, 21 Nov 2001–28 Nov 2001, R. Harin'Hala, 1♂ (00006244) (CAS). Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 04 Dec 2001–11 Dec 2001, R. Harin'Hala, 1♂ (00006245) (CAS); 08 Feb 2002–15 Feb 2002, R. Harin'Hala, 1♂ (00006133) (CAS); 22 Feb 2002–01 Mar 2002, R. Harin'Hala, 1♂ (00006220) (SU); 18 Jun 2002–28 Jun 2002, R. Harin'Hala, 1♂ (00006219) (UCR).

***Tanindrazanus marginatus*,** new species
Plates 3, 6, 9; map 8

DIAGNOSIS: Males are recognized among other species in this genus by the brownish coloration, synthlipsis about the width of an eye, and large eyes reaching the dorsal and ventral head surfaces. This species is similar to *T. tenebricus* and *T. nigripes*, but differs from both species by the lighter coloration and lateral carinulation on the intersegmental suture between sternites VI and VII. *Tanindrazanus marginatus* is further distinguished from *T. nigripes* by the smaller synthlipsis width.

DESCRIPTION: Medium body size (length: 16.43 mm, holotype; 13.62–17.43 mm). COLORATION: Dark brown with light brown clypeus, postclypeus medially, dorsal margin of ocellar tubercle, labium, basal wing veins, trochanters, femora except apically, tibiae basally, tarsi, and lateral margin of sternites. Distal half of antennal segment V and segments VI and VII white. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III on forelegs, slightly longer on mid and hind legs; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternite II–IV and laterally between IV–VII; pygophore process subtriangular in lateral view (pl. 20H, I); BPE longer than basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the pale laterotergites.

DISTRIBUTION: Antsiranana, Fianarantsoa, Toamasina, and Toliara provinces (map 8).

DISCUSSION: In some specimens, the dorsal neck surface, thorax, corium, coxae, and laterotergites are light brown and the postclypeus medially dark brown.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1110 m, 08 Apr 2002–15 Apr 2002, M. Irwin, R. Harin'Hala (00006821) (CAS).

PARATYPES: **Madagascar: Antsiranana:** Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 04 Feb 2005–11 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00006892) (CAS); 18 Mar 2005–25 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00006888) (CAS); 28 Apr 2005–07 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00006908) (USNM); 13 Jul 2005–28 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00006087) (AMNH); 14 Oct 2005–22 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00006850) (SU). Montaigne Francais, 12.325°S 49.33333°E, 150 m, 30 Jan 2001–15 Feb 2001, M. Irwin, R. Harin'Hala, 2♂ (00006833, 00006847) (CAS), 1♂ (00006921) (AMNH); 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006920) (UCR). Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 12 Feb 2001–04 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006932) (CAS). Parc National Montagne d'Ambre, 12.52027°S 49.17916°E, 1125 m, 30 May 2001–06 Jun 2001, M. Irwin, R. Harin'Hala, 1♂ (00006834) (UCR). **Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 13 Jan 2007–20 Jan 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006931) (MNHN); 04 Feb 2007–10 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 4♂ (00006805, 00006806, 00006855, 00006860) (CAS); 10 Feb 2007–17 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006803, 00006804, 00006861) (AMNH); 03 Mar 2007–10 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006941) (UCR); 17 Mar 2007–24 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006936) (SU); 24 Mar 2007–31 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006810) (CAS); 07 Apr 2007–14 Apr 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006937)

(CAS); 14 Apr 2007–21 Apr 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006942) (CAS); 06 May 2007–14 May 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006801) (BMNH); 14 May 2007–21 May 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006943) (MNHN); 02 Jun 2007–10 Jun 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006930) (CAS); 07 Jul 2007–14 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006934) (CAS); 14 Jul 2007–19 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006926) (SU); 19 Jul 2007–23 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006927) (SU); 23 Jul 2007–28 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006928) (AMNH); 03 Aug 2007–11 Aug 2007, M. Irwin, F. Parker, R. Harin'Hala, 4♂ (00006811, 00006857, 00006858, 00006938) (USNM); 27 Aug 2007–06 Sep 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006929) (CAS); 06 Sep 2007–13 Sep 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006856, 00006944) (MNHN); 27 Sep 2007–04 Oct 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006807–00006809) (CAS); 25 Oct 2007–08 Nov 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006922) (CAS); 08 Nov 2007–22 Nov 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006812, 00006859, 00006945) (BMNH); 28 Nov 2007–13 Dec 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006935) (USNM); 03 Jan 2008–09 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1⚄ (00006907) (SU); 09 Jan 2008–17 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006836) (UCR); 01 Apr 2008–09 Apr 2008, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006887, 00006890) (CAS). Manombo Special Reserve camp site, 32 km SSE of Farafangana, 23.02183°S 47.72°E, 36 m, 10 Oct 2004–21 Oct 2004, M. Irwin, R. Harin'Hala, 1♂ (00045347) (CAS); 23 Nov 2004–05 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00045266) (UCR); 15 Dec 2004–26 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00045207) (AMNH); 26 Dec 2004–05 Jan 2005, M. Irwin, R. Harin'Hala, 3♂ (00045006, 00045195, 00045522) (CAS); 16 Jan 2005–20 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00045467) (SU); 15 Feb 2005–27 Feb 2005, M. Irwin, R. Harin'Hala, 2♂ (00044964, 00045376) (CAS); 24 Apr 2005–10 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00044810) (BMNH); 10 May 2005–22 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00045152) (BMNH); 06 Jun 2005–24 Jun 2005, M. Irwin, R. Harin'Hala, 2♂ (00007190, 00045382) (USNM); 24 Jun 2005–10 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00044842) (MNHN); 10 Jul 2005–27 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00045119) (CAS); 09 Oct 2005–16 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00044946) (UCR). Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 15 Nov 2001–22 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00045415) (CAS); 28 Jan 2002–04 Feb 2002, M. Irwin, R. Harin'Hala, 2♂ (00006879, 00006880) (CAS); 12 Feb 2002–19 Feb 2002, M. Irwin, R. Harin'Hala, 2♂ (00006835, 00006940) (SU); 14 Apr 2002–23 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00045707) (CAS); 03 Jun 2002–13 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00006904) (MNHN); 13 Jun 2002–23 Jun 2002, M. Irwin, R. Harin'Hala, 1♂ (00006905) (CAS); 16 Feb 2003–26 Feb 2003, M. Irwin, R. Harin'Hala, 2♂ (00006883, 00006884) (USNM); 21 Mar 2003–12 Apr 2003, M. Irwin, R. Harin'Hala, 1♂ (00006891) (BMNH); 04 May 2003–16 May 2003, M. Irwin, R. Harin'Hala, 2♂ (00006885, 00006886) (AMNH); 15 May 2003–28 May 2003, M. Irwin, R. Harin'Hala, 1♂ (00006960) (CAS); 28 May 2003–06 Jun 2003, M. Irwin, R. Harin'Hala, 1♂ (00045034) (UCR). Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1110 m, 19 Feb 2002–26 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00006902) (CAS); 04 Mar 2002–12 Mar 2002, M. Irwin, R. Harin'Hala, 1♂ (00006837) (SU); 26 Mar 2002–31 Mar 2002, M. Irwin, R. Harin'Hala, 3♂ (00006844–00006846) (CAS), 1♂ (00006924) (USNM); 31 Mar 2002–08 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00006903) (USNM); 08 Apr 2002–15 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00006799) (AMNH), 17♂ (00006815–00006820, 00006822–00006830) (CAS), 3♂ (00006843, 00006925, 00006933) (UCR). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 06 Dec 2001–15 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00006917) (CAS); 21 Dec 2001–24 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00044908) (UCR); 14 Jan 2002–21 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00045718) (CAS); 28 Jan 2002–04 Feb 2002, M. Irwin, R. Harin'Hala, 1♂ (00099047) (CAS); 09 Apr 2002–16 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00006896) (USNM); 30 Apr 2002–07 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00006839) (AMNH); 07 May 2002–14 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00006802) (CAS); 18 Feb 2003–27 Feb 2003, M. Irwin, R. Harin'Hala, 1♂ (00007112) (MNHN); 09 Mar 2003–20 Mar 2003, M. Irwin, R. Harin'Hala, 1♂ (00006895) (BMNH); 07 May 2003–17 May 2003, M. Irwin, R. Harin'Hala, 2♂ (00006874, 00006875) (SU); 06 Aug 2003–16 Aug 2003, M. Irwin, R. Harin'Hala, 3♂ (00006911–00006913) (CAS), 1♂ (00006919) (BMNH); 28 Sep 2003–08 Oct 2003, M. Irwin, R. Harin'Hala, 1♂ (00006898) (CAS); 18 Oct 2003–26 Oct 2003, M. Irwin, R. Harin'Hala, 1♂ (00006899) (CAS); 17 Dec 2003–30 Dec 2003, M. Irwin, R. Harin'Hala, 2♂ (00006831, 00006832) (CAS); 30 Dec 2003–11 Jan 2004, M. Irwin, R. Harin'Hala, 1♂ (00006914) (CAS); 11 Jan 2004–21 Jan 2004, M. Irwin, R. Harin'Hala, 2♂ (00006881, 00006882) (MNHN); 31 Jan 2004–12 Feb 2004, M.

Irwin, R. Harin'Hala, 1♂ (00006894) (CAS); 21 Mar 2004–02 Apr 2004, M. Irwin, R. Harin'Hala, 2♂ (00006796, 00006797) (AMNH); 02 Apr 2004–15 Apr 2004, M. Irwin, R. Harin'Hala, 1♂ (00006840) (USNM); 24 Jun 2004–08 Jul 2004, M. Irwin, R. Harin'Hala, 2♂ (00006838, 00006897) (BMNH); 07 Oct 2004–20 Oct 2004, M. Irwin, R. Harin'Hala, 1♂ (00006918) (UCR); 14 Jan 2005–02 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00006868) (SU); 27 Feb 2005–13 Mar 2005, M. Irwin, R. Harin'Hala, 3♂ (00006841, 00006842, 00006916) (CAS); 28 Mar 2005–10 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00006900) (BMNH); 25 Sep 2005–07 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00006869) (CAS); 06 Nov 2005–13 Nov 2005, M. Irwin, R. Harin'Hala, 1♂ (00006946) (CAS); 13 Nov 2005–24 Nov 2005, M. Irwin, R. Harin'Hala, 1♂ (00006865) (MNHN); 21 Dec 2005–30 Dec 2005, M. Irwin, R. Harin'Hala, 1♂ (00006866) (BMNH); 20 Jan 2006–29 Jan 2006, M. Irwin, R. Harin'Hala, 2♂ (00006872, 00006873) (SU); 29 Jan 2006–07 Feb 2006, M. Irwin, R. Harin'Hala, 1♂ (00006915) (CAS); 15 Feb 2006–26 Feb 2006, M. Irwin, R. Harin'Hala, 9♂ (00006947–00006950, 00006953–00006957) (CAS); 05 Mar 2006–18 Mar 2006, M. Irwin, R. Harin'Hala, 2♂ (00006854, 00006867) (UCR); 18 Mar 2006–30 Mar 2006, M. Irwin, R. Harin'Hala, 3♂ (00006862–00006864) (MNHN); 13 Apr 2006–24 Apr 2006, M. Irwin, R. Harin'Hala, 1♂ (00006870) (AMNH); 02 May 2006–13 May 2006, M. Irwin, R. Harin'Hala, 2♂ (00006871, 00006901) (MNHN); 20 May 2006–29 May 2006, M. Irwin, R. Harin'Hala, 1♂ (00006893) (CAS); 09 Aug 2006–23 Aug 2006, M. Irwin, R. Harin'Hala, 1♂ (00006800) (USNM); 23 Aug 2006–07 Sep 2006, M. Irwin, R. Harin'Hala, 1♂ (00006853) (CAS); 07 Sep 2006–20 Sep 2006, M. Irwin, R. Harin'Hala, 3♂ (00006851, 00006852, 00006951) (BMNH); 20 Sep 2006–05 Oct 2006, M. Irwin, R. Harin'Hala, 1♂ (00006952) (SU); 01 Nov 2006–11 Nov 2006, M. Irwin, R. Harin'Hala, 1♂ (00044923) (UCR). Parc National d'Isalo, 9.1 km 354° N Ranohira, 22.48166°S 45.46166°E, 725 m, 27 Jan 2003–31 Jan 2003, Fisher et al., 1♂ (00005363) (AMNH), 3♂ (00006876–00006878) (CAS). Ranomafana JIRAMA water works, 21.2485°S 47.45216°E, 690 m, 16 Oct 2001–08 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00005361) (CAS). **Toamasina:** Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 01 Sep 2001–05 Sep 2001, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006889) (CAS). Fampanambo, 15.37550°S 49.62175°E, 108 m, 1962, J. Vadon, 1♂ (MRAC). Mobot Site, Analalava 7 km SW of Foulpointe, 17.69333°S 49.46027°E, 18 m, 21 Dec 2007–28 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00044874) (SU); 18 Jan 2008–25 Jan 2008, M. Irwin, R. Harin'Hala, 2♂ (00006848, 00006909) (CAS), 1♂ (00044801) (USNM); 25 Jan 2008–01 Feb 2008, M. Irwin, R. Harin'Hala, 1♂ (00006923) (CAS), 1♂ (00006939) (AMNH); 21 Mar 2008–28 Mar 2008, M. Irwin, R. Harin'Hala, 1♂ (00006798) (UCR). Mobot Site, Analalava 7 km SW of Foulpointe, 17.70889°S 49.45806°E, 24 m, 15 Sep 2007–21 Sep 2007, M. Irwin, R. Harin'Hala, 1♂ (00006906) (CAS). **Toliara:** Kirindy forest, 60 km NE of Morondava, 20.0665°S 44.65767°E, 45 m, 18 Oct 2003–30 Oct 2003, M. Irwin, R. Harin'Hala, 1♂ (00045067) (CAS). **Unknown:** 3♂ (00006813, 00006814, 00006849) (CAS).

Tanindrazanus marojejy, new species

Plates 3, 6, 9, 20H; map 6

Diagnosis: Males recognized among other *Tanindrazanus* species by the black body with red abdomen and pale orange hemelytra, ventrally flat head surface, broad postocular in dorsal view, labial segment II shorter than segment III, and continuous pronotal transverse furrow. This species is similar to *T. anjozorobeus* and *T. kathrynae*, but is distinguished by the black head, thorax, and legs; pale orange hemelytra; flat ventral head surface; synthlipsis about 1.5 times width of eye; labial segment II shorter than III; and intersegmental sutures carinulate between II and III and laterally between III–VI.

Description: Medium body size (length: 17.53 mm, holotype; 17.05–19.72 mm). COLORATION: Black with antennal segment VI and basal half of segment VII, hemelytron, tarsi, and pretarsi orange and distal half of antennal segment VII pale orange. Abdomen red with anterior margin of sternite II, sternite VII (except small anterolateral spot), laterotergite VII (except anterior margin), and pygophore black. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally flat; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye; ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); postclypeus with shallow, broad depression to middle of interocular area (pl. 13B); postocular moderately broad in dorsal view; eye about one-fourth of head length, not reaching dorsal and ventral

head surfaces; pedicel about one-fourth longer than scape; labial segment III longer than II. THORAX: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III; hemelytron almost reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between II and III and laterally between III–VI; pygophore process subtriangular in lateral view (pl. 20H); BPE shorter than basal plate; area of endosomal struts–DPS fusion elongate subquadrate (pl. 21G).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Marojejy Nature Reserve, Madagascar.

DISTRIBUTION: Marojejy Nature Reserve in the Antsiranana province (map 6).

HOLOTYPE: Male: **Madagascar: Antsiranana:** R.N.I. de Marojejy, 11.0 km NW Manantenina, 14.43667°S 49.74167°E, 1225 m, 25 Oct 1996–03 Nov 1996, Eric L. Quinter (00078359) (AMNH).

PARATYPES: **Madagascar: Antsiranana:** Sambava District, R.N. XII Marojejy, Ambatosoratra, 14.38735°S 49.75717°E, 1700m, Nov 1960, P. Soga, 3♂ (MNHN).

Tanindrazanus nigripes, new species

Plates 3, 6, 9, 22E; map 8

DIAGNOSIS: Males recognized among other *Tanindrazanus* species by the dark brown to black coloration with pale yellow markings, synthlipsis about 1.5 times the width of an eye, and eyes not reaching the dorsal and ventral head margins. This species is similar to *T. tenebricus*, but the larger width of the synthlipsis, eyes not reaching the dorsal and ventral head margins, and intersegmental sutures carinulate between sternites II–IV distinguishes *T. marginatus* from *T. tenebricus*.

DESCRIPTION: Medium body size (length: 12.63 mm, holotype; 11.78–12.63 mm). COLORATION: Dark brown to black with mandibular plates dorsally, postocular dorsally except ocellar tubercle, and fore- and mid femora ventrally and laterally pale yellow. Labium light brown except segment II basally and distal two-thirds of antennal segment V and segments VI and VII white. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with shallow, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about 1.5 times width of eye; interocular sulcus at (pl. 13B) or posterior to hind margin of eye; postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, not reaching dorsal and ventral head surfaces; pedicel about two-fifths longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur moderately incrassate; tarsomeres I and II combined subequal to III on fore- and mid legs, longer on hind legs; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–IV; pygophore process subtriangular in lateral view (pl. 20H, I); BPE as long as basal plate (pl. 22E); area of endosomal struts–DPS fusion ovate (pl. 21H).

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the blackish coloration of the body.

DISTRIBUTION: Antsiranana and Toamasina provinces (map 8).

DISCUSSION: Coloration is variable with the clypeus, postclypeus, coxae, intersternal sutures, median longitudinal depression on sternites, and medial sternites pale yellow in some specimens.

HOLOTYPE: Male: **Madagascar: Antsiranana:** Sakalava Beach, dwarf littoral forest, 12.26277°S 49.3975°E, 10 m, 31 May 2001–07 Jun 2001, M. Irwin, R. Harin'Hala (00006712) (CAS).

PARATYPES: **Madagascar: Antsiranana:** Forêt Ambato, 26.6 km 33° NE Ambanja, 13.46444°S 48.55166°E, 150 m, 08 Dec 2004, B.L. Fisher, 1♂ (00044939) (CAS). Montagne Français, 12.325°S 49.33333°E, 150 m, 15 Feb 2001–06 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006705) (SU), 1♂ (00006717) (USNM); 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00045437) (UCR). Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 26 Jan 2001–29 Jan 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 3♂ (00006715, 00007165, 00007195) (CAS), 1♂ (00007231) (AMNH); 11 Feb 2001–12 Feb 2001, M. Irwin, R. Harin'Hala, 2♂ (00006727, 00045465) (CAS); 04 Mar 2001–19 Mar 2001, M. Irwin, R. Harin'Hala, 4♂ (00006704, 00006710, 00006726, 00045231) (CAS), 1♂ (000045328) (BMNH), 1♂ (000045436) (MNHN), 1♂ (00045500) (SU). Parc National Montagne d'Ambre, 12.51666°S 49.18333°E, 975 m, 25 Jan 2001–11 Feb 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00005368) (UCR); 25 Jan 2001–29 Jan 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 2♂ (00007047, 00007134) (CAS); 11 Feb 2001–04 Mar 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00006145) (BMNH), 1♂ (00006718) (MNHN). Parc National Montagne d'Ambre, 12.52027°S 49.17916°E, 1125 m, 19 Mar 2001–15 Apr 2001, M. Irwin, R. Harin'Hala, 2♂ (00006714, 00006716) (CAS), 1♂ (00006721) (BMNH), 1♂ (00006722) (AMNH); 21 Apr 2001–26 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006703) (UCR); 14 May 2001–30 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00006711) (USNM); 30 May 2001–06 Jun 2001, M. Irwin, R. Harin'Hala, 1♂ (00006706) (CAS), 1♂ (00006713) (MNHN). Sakalava Beach, dwarf littoral forest, 12.26277°S 49.3975°E, 10 m, 07 Apr 2001–22 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006708) (SU); 13 May 2001–16 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00006708) (USNM); 07 Jun 2001–25 Jun 2001, M. Irwin, R. Harin'Hala, 1♂ (00006709) (AMNH); 13 Aug 2001–20 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00045396) (CAS); 20 Aug 2001–28 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00007143) (UCR). **Toamasina:** Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 08 Oct 2001–16 Oct 2001, M. Irwin, R. Harin'Hala, 1♂ (00006725) (CAS). **Unknown:** 2♂ (00006707, 00045240) (CAS).

Tanindrazanus notatus, new species

Plates 3, 6, 10, 21G; map 6

DIAGNOSIS: Males are recognized among other species in this genus by the distinct dull orange-brown coloration with black markings on the hind legs. *Tanindrazanus notatus* is similar to *T. andohahela* and *T. bemaraha*, but the black apical half of the hind femur and tibia and the subequal lengths of labial segments II and III differentiate *T. notatus* from these species.

DESCRIPTION: Medium body size (length: 10.17 mm, holotype; 10.17–12.24). COLORATION: Orange with apical half of scape, pedicel, antennal segments III–VI, apical half of hind femur, and hind tibia, except basally, dark brown. Apex of corium, membrane, and distal wing veins brown. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe without distinct anterolateral projections; posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; forefemur moderately incrassate; tarsomeres I and II combined subequal to III; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20H, I); BPE shorter than basal plate; area of endosomal struts–DPS fusion elongate subquadrate (pl. 21G).

ETYMOLOGY: The species epithet is a past participle in the nominative case and is named for the black markings on the hind legs.

DISTRIBUTION: Beroboka village from the Toliara province (map 6).

DISCUSSION: The two specimens examined differ in size (10.17 and 12.24 mm) but are mor-

phologically similar and were collected from the same locality.

HOLOTYPE: Male: **Madagascar: Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 05 Feb 2009–13 Feb 2009, M. Irwin, R. Harin'Hala (00045368) (CAS).

PARATYPE: **Madagascar: Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 19 Dec 2008–27 Dec 2008, M. Irwin, R. Harin'Hala, 1♂ (00044868) (CAS).

Tanindrazanus simulans, new species

Plates 3, 6, 10

DIAGNOSIS: Males are recognized among other *Tanindrazanus* species by the nearly uniform dark brown to blackish coloration, synthlipsis about one and one-fourth times wider than the width of an eye, eyes reaching ventral and almost reaching the dorsal head margins, and a continuous pronotal transverse furrow. This species is similar to *T. tenebricus* and *T. nigripes*, but is distinguished by the width of synthlipsis, eyes reaching the ventral head margin but not the dorsal margin, and the pedicel about one-fifth longer than scape.

DESCRIPTION: Medium body size (length: 15.40 mm, holotype; 15.10–15.40 mm). COLORATION: Blackish except postocular part of the head around ocellar tubercle and tarsi pale brown. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about one and one-fourth times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, reaching ventral but not dorsal head surface; pedicel about one-fifth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III on forelegs, longer on mid and hind legs; hemelytra surpassing abdominal apex. ABDOMEN: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternite II–IV and laterally between IV–VI; pygophore process subtriangular in lateral view (pl. 20H, I); BPE longer than basal plate; area of endosomal struts–DPS fusion ovate.

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named after the similarity to *T. tenebricus*.

DISTRIBUTION: The two known specimens were labeled as originating from "Ivondro." There are at least four localities in the Fianarantsoa, Toamasina, and Toliara provinces that include the name "Ivondro"; we were unable to determine the exact locality.

HOLOTYPE: Male: **Madagascar**: **Unknown:** Reg. S.E. Ivondro, 1939, A. Seyrig (MNHN).

PARATYPE: **Madagascar**: **Unknown:** Reg. S.E. Ivondro, Feb 1940, A. Seyrig, 1♂ (MNHN).

Tanindrazanus tenebricus, new species

Plates 3, 6, 10, 18B; map 8

DIAGNOSIS: Males are recognized among other *Tanindrazanus* species by the blackish coloration with pale markings on the head and pronotum, synthlipsis about the width of an eye, and large eyes reaching only dorsal head. This species is similar to *T. nigripes* and *T. simulans*, from which it differs by the smaller synthlipsis width and eyes reaching the dorsal but not the ventral head surface. *Tanindrazanus tenebricus* is further differentiated from *T. nigripes* by the intersegmental sutures carinulate between sternite II–IV and laterally between IV–VI.

DESCRIPTION: Medium body size (length: 16.37 mm, holotype; 15.40–17.02 mm). COLORATION: Blackish with mandibular plates dorsally, postocular dorsally except ocellar tubercle, posterolateral margin of pronotum, and tarsi pale yellow. Labium light brown, except segment II basally, and antennal segment

VI light brown and segment VII white. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum (pl. 13G, H); postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13H); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about one-third of head length, reaching dorsal but not ventral head surface; pedicel about one-fourth longer than scape; labial segment III subequal to II. Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); legs slender; tarsomeres I and II combined subequal to III on forelegs, longer on mid and hind legs; wings spread out in specimens. Abdomen (pl. 18B): Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternite II–IV and laterally between IV–VI; pygophore process subtriangular in lateral view (pl. 20H, I); BPE longer than basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

Etymology: The species epithet is an adjective in the nominative case and is named for the dark coloration of the body.

Distribution: Specimens are known from the southeastern region of the Fianarantsoa province (map 8). Two specimens were labeled as originating from "Ivondro." There are at least four localities in the Fianarantsoa, Toamasina, and Toliara provinces that include the name "Ivondro"; we were unable to determine the exact locality.

Holotype: Male: **Madagascar: Fianarantsoa:** Manombo Special Reserve camp site, 32 km SSE of Farafangana, 23.02183°S 47.72°E, 36 m, 16 Jan 2005–20 Jan 2005, M. Irwin, R. Harin'Hala (00045483) (CAS).

Paratypes: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 10 Feb 2007–17 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006723) (CAS); 03 Mar 2007–10 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006720) (SU); 17 Mar 2007–24 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006724) (UCR). Manombo Special Reserve camp site, 32 km SSE of Farafangana, 23.02183°S 47.72°E, 36 m, 10 Oct 2004–21 Oct 2004, M. Irwin, R. Harin'Hala, 2♂ (00007141, 00044862) (CAS); 23 Nov 2004–05 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00044995) (AMNH); 05 Jan 2005–16 Jan 2005, M. Irwin, R. Harin'Hala, 2♂ (00007046, 00045656) (CAS); 16 Jan 2005–20 Jan 2005, M. Irwin, R. Harin'Hala, 2♂ (00045488, 00045723) (BMNH); 13 Mar 2005–26 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00045301) (UCR); 10 Apr 2005–24 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00044873, 00045022) (CAS), 1♂ (00045267) (AMNH); 22 May 2005–06 Jun 2005, M. Irwin, R. Harin'Hala, 7♂ (00007118, 00045270, 00045399, 00045403, 00045496, 00045606, 00045721) (CAS); 10 Aug 2005–25 Aug 2005, M. Irwin, R. Harin'Hala, 2♂ (00044828, 00045684) (MNHN); 11 Sep 2005–25 Sep 2005, M. Irwin, R. Harin'Hala, 1♂ (00045104) (CAS), 1♂ (00045196) (USNM); 25 Sep 2005–02 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00007101) (SU), 1♂ (00045477) (UCR). **Unknown:** Reg. S.E. Ivondro, Dec 1938, A. Seyrig, 1♂ (MNHN); 1939, A. Seyrig, 1♂ (MNHN).

Tanindrazanus varicolor, new species

Plates 3, 6, 7, 10, 13H, 16A, 17C, 20I, 21H; map 7

Diagnosis: Males are recognized among other species in this genus by the distinct black and orange coloration, labial segments II and III subequal in length, and the anterior pronotal lobe with very small anterolateral protuberances. This species is similar to *T. irwini*, but differs by the smaller body size, anteromedial depression on the ventral head surface, and intersegmental sutures carinulate between sternite II–VI and laterally between VI and VII, as well as the diagnostic features mentioned.

Description: Medium body size (length: 15.97 mm, holotype; 15.89–16.12 mm). COLORATION: Dark brown-black with bright orange head, scape, labium, pronotum, scutellum medially, stridulatory groove, meso- and metasternal longitudinal

depressions, hemelytron except posteromedial spot, femora except medially on mid leg, tibiae, tarsi, anterior half of laterotergites, sternite III medially, and sternites II–VII anterolaterally. Distal half of antennal segment VII white. VESTITURE: As in generic description. STRUCTURE: Head (pl. 13H): Ventrally with shallow anteromedial depression; clypeal apex dorsally elevated relative to labrum; postclypeus with relatively deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); legs slender; tarsomeres I and II combined subequal to III on fore- and mid legs, longer on hind legs; hemelytron reaching or surpassing abdominal apex. Abdomen: Apex rounded; dorsal laterotergite II not expanded; intersegmental sutures carinulate between sternite II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20I); BPE as long as basal plate; area of endosomal struts–DPS fusion ovate (pl. 21H).

Etymology: The species epithet is an adjective in the nominative case and is named for the variable color forms of this species.

Distribution: Toamasina and the northern region of the Antsiranana provinces (map 7).

Discussion: Some specimens are predominately orange in coloration while others have reduced to absent orange markings on the head, thorax, scutellum, femora, tibiae, and abdomen.

Holotype: Male: **Madagascar: Antsiranana:** Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 26 Jan 2001–29 Jan 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala (00006271) (CAS).

Paratypes: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.33333°S 49.25°E, 360 m, 20 Mar 2001–07 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006287) (CAS); 27 Apr 2001–13 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00006288) (UCR); 13 May 2001–16 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00006484) (USNM). Montagne Français, 12.325°S 49.33333°E, 150 m, 30 Jan 2001–15 Feb 2001, M. Irwin, R. Harin'Hala, 1♂ (00006279) (SU); 15 Feb 2001–06 Mar 2001, M. Irwin, R. Harin'Hala, 2♂ (00006274, 00006281) (CAS); 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006259) (UCR). Parc National Montagne d'Ambre, 12.52027°S 49.17916°E, 1125 m, 11 Feb 2001–04 Mar 2001, M. Irwin, R. Harin'Hala, 2♂ (00006254, 00006264) (CAS); 19 Mar 2001–15 Apr 2001, M. Irwin, R. Harin'Hala, 3♂ (00006247, 00006256, 00006257) (CAS), 1♂ (00006282) (MNHN); 05 Apr 2001–21 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006136) (BMNH), 1♂ (00006267) (AMNH); 21 Apr 2001–26 Apr 2001, M. Irwin, R. Harin'Hala, 2♂ (00006482, 00006483) (UCR). Parc National Montagne d'Ambre, 12.61666°S 49.15°E, 1116 m, Dec 1968, J. Vadon and A. Peyrieras, 1♂ (MNHN). Parc National Montagne d'Ambre, 12.51666°S 49.18333°E, 975 m, 25 Jan 2001–11 Feb 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 2♂ (00006255, 00006486) (CAS); 04 Mar 2001–19 Mar 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00006266) (UCR). Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 23 Jan 2001, M.E. Irwin, 2♂ (00006116, 00006258) (USNM); 26 Jan 2001–29 Jan 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 2♂ (00006253, 00006272) (CAS), 1♂ (00007065) (SU); 11 Feb 2001–12 Feb 2001, M. Irwin, R. Harin'Hala, 2♂ (00006277, 00006278) (UCR); 04 Mar 2001–19 Mar 2001, M. Irwin, R. Harin'Hala, 3♂ (00006252, 00006275, 00006276) (CAS), 1♂ (00006292) (AMNH); 19 Mar 2001–05 Apr 2001, M. Irwin, R. Harin'Hala, 3♂ (00006289, 00006291, 00006702) (CAS). Sakalava Beach, dwarf littoral forest, 12.26277°S 49.3975°E, 10 m, 15 Feb 2001–06 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006283) (CAS); 06 Mar 2001–20 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006260) (CAS); 20 Mar 2001–07 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006273) (BMNH); 07 Apr 2001–22 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006265) (MNHN); 13 May 2001–16 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00006498) (AMNH); 31 May 2001–07 Jun 2001, M. Irwin, R. Harin'Hala, 1♂ (00006251) (SU); 13 Aug 2001–20 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00045641) (USNM); 20 Aug 2001–28 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00006485) (UCR). **Toamasina:** 7 km SE of Andasibe National Park headquarters, 18.96266°S 48.45266°E, 1050 m, 23 Mar 2001–07 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006269) (CAS);

09 Apr 2001–23 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00006115) (UCR). Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 31 Jul 2001–15 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00006250) (UCR); 08 Oct 2001–16 Oct 2001, M. Irwin, R. Harin'Hala, 1♂ (00006246) (BMNH), 1♂ (00006248) (MNHN), 5♂ (00006249, 00006280, 00006284–00006286) (CAS), 1♂ (00006290) (SU); 07 Nov 2001–16 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00005360) (CAS), 1♂ (00006268) (AMNH). **Unknown:** 1♂ (00006270) (CAS).

Tanindrazanus vohiparara, new species

Plates 3, 7, 10; map 8

DIAGNOSIS: Males are recognized among other species *Tanindrazanus* by the blackish coloration with pale yellow markings, large eyes reaching dorsal and ventral head margins, smooth posterior pronotal lobe, a very slightly expanded dorsal laterotergite II, and the intersegmental sutures carinulate between sternites II–V. This species is similar to *T. nigripes*, particularly a variant of this species, but is distinguished by the eye about half of head length, smooth posterior pronotal lobe, and expanded dorsal laterotergite II.

DESCRIPTION: Medium body size (length: 11.20 mm, holotype). COLORATION: Black with pale yellow scape basally, antennal segment VII, labial segment III and VI, thoracic sterna except medial longitudinal depression on meso- and metasterna, coxae, trochanters, forefemur ventrally and basally, mid and hind femora except medially, foretibia ventrally, anterior margins of laterotergites, and abdominal sternites except large lateral spots on II–VI and apex of VII. VESTITURE: As in generic description. STRUCTURE: HEAD: Ventrally with shallow anteromedial depression; clypeal apex slightly elevated relative to labrum (pl. 13G, H); postclypeus with deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, separated by less than diameter of ocellus, located on distinct median tubercle (pl. 13H); eye about half of head length, reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape; labial segment III subequal to II. THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow continuous; legs slender; tarsomeres I and II combined subequal to III; wings spread out in specimen. ABDOMEN: Apex rounded; dorsal laterotergite II very slightly expanded; intersegmental sutures carinulate between sternites II–V; pygophore process subtriangular in lateral view (pl. 20H, I); BPE shorter than basal plate; endosomal struts ventrally obscured by semiextended endosoma; area of endosomal struts–DPS fusion ovate (pl. 21H).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality that is part of Ranomafana National Park, Madagascar.

DISTRIBUTION: Ranomafana National Park in the Fianarantsoa province (map 8).

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1100 m, 04 Mar 2002–12 Mar 2002, M. Irwin, R. Harin'Hala (00006139) (CAS).

PARATYPE: **Madagascar: Fianarantsoa:** Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 23 Oct 2005–30 Oct 2005, M. Irwin, R. Harin'Hala, 1♂ (00045227) (CAS).

Toliarus, new genus

Plates 3, 7, 10, 13I, 19G, 20J, 21I, 22F; map 9

TYPE SPECIES: *Toliarus trichrous*, new species.

DIAGNOSIS: Males recognized by a combination of the following characters: the small body size, ocelli on a shallow median tubercle, large antennal shield that does not conceal antennal insertion in lateral view, 6-segmented antenna, and punctate posterior pronotal lobe. This genus is very similar to *Tanindrazanus*, from which it differs by the smaller body size, 6-segmented antenna, and punctate posterior pronotal lobe.

DESCRIPTION: **MALE:** Macropterous, small body size. COLORATION: Red and black or

orange and black. VESTITURE: Dense, semierect to erect, long pale to dark brown setae on head, thorax, legs, corium, and abdomen; setae on tibiae stouter and denser near apex. STRUCTURE: Head (pl. 13I): Subtriangular in lateral view, longer than wide in dorsal view, shorter than pronotum; anteocular region longer than postocular; clypeal apex not elevated relative to labrum; maxillary plate not reaching dorsal surface of clypeus [except nearly reaching in a some specimens of *T. trichrous*]; postclypeus depressed (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli present, located on shallow median tubercle; distinct constriction between postocular and neck; gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin; antennal shield not concealing antennal insertion in lateral view; antenna inserted dorsally on head; scape surpassing clypeal apex, pedicel slightly curved; flagellum subdivided into BFLA and DFLA; BFLA divided into two pseudosegments; DFLA divided into two pseudosegments; antenna thus appearing 6-segmented; labium slender; labial segment III subequal to II, ventrally straight. Thorax: Pronotum wider than long, anterior margin distinctly concave, collar distinct (pl. 15B); anterior pronotal lobe shorter than posterior lobe (pl. 15B), more than half as wide as posterior lobe, relatively smooth; posterior pronotal lobe weakly punctate; pronotal longitudinal furrow reaching anterior but not posterior margin, foveate posteriorly (pl. 15B); pronotal transverse furrow distinct (pl. 15B); lateral depressions on pronotum distinct (pl. 15B), transversely striated; scutellum with two broadly separated apical processes, disc medially depressed; meso- and metasterna shallowly separated by transverse suture (pl. 15F); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with deeply depressed meshlike cuticle that extends dorsally in lateral view (pl. 16A); fossula spongiosa on fore- and mid tibiae; corium restricted to areas adjacent to basal wing veins, with pterostigmalike appearance on anterodistal margin (pl. 17A, C); distal part of R present but not forming cell with M (pl. 17B, C); proximal parts of M and Cu veins separate (pl. 17A, C); distal part of M extending beyond apical junction of M+Cu (pl. 17A, C); base of M+Cu cell shorter than or as wide as Cu+1A cell (pl. 17B, C). Abdomen: Dorsal laterotergite II not expanded; sternites shallowly depressed medially (pl. 18C), intersegmental sutures carinulate; spiracles ovoid; pygophore (pls. 19G, 20J) process subtriangular in lateral view, directed dorsoposteriad, not surpassing posterior margin of pygophore; DPS apex rounded (pl. 21I); endosomal struts reaching posterior margin of DPS, with anterior and posterior ventral processes (pl. 22G); endosoma medially sclerotized (pl. 21I).

Etymology: This genus is named after the locality province of the type species, Toliara, Madagascar. The gender is masculine.

Distribution: Species are known from the southern region of the Toliara province and from the Antsiranana province and in habitats between 35–180 m elevation. Macrohabitats are described as gallery forests, spiny forests, dry deciduous forests, and transitional forests.

Discussion: Female specimens are unknown for species currently in this genus. The size of the maxillary plates is polymorphic in *T. trichrous*; in approximately 40% of the specimens, the maxillary plates nearly reach the dorsal clypeal surface when viewed laterally (pl. 13H).

Identification Key to the Males of Species of *Toliarus*

1. Orange with blackish markings, ocelli separated by a distance about the diameter of an ocellus, medium body size (>10 mm) . . . . . *karinae*, new species
– Tricolored (red and black with dark brown forewing membrane), ocelli separated by more than diameter of an ocellus; small body size (<10 mm) *trichrous*, new species

Toliarus karinae, new species

Plates 3, 7; map 9

Diagnosis: Males are similar to *T. trichrous*, but is easily distinguished by the larger body size,

distinct orange body with blackish markings on the hemelytra and tibiae, medium sized ocelli, and weak punctuation on the posterior pronotal lobe.

Description: Medium body size (length: 12.10 mm, holotype). COLORATION: Orange with antenna except scape ventrally, clavus, forewing membrane, and apices of tibiae blackish. Antennifer apically white. VESTITURE: As in generic description. STRUCTURE: Head: Ventrally with shallow anteromedial depression; postclypeus with relatively deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli medium sized, separated by a distance about the diameter of an ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape. Thorax: Anterior pronotal lobe without distinct anterolateral projections; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur incrassate; tarsomeres I and II subequal to III; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subquadrate in caudal view, with truncate apex; BPE as long as basal plate (pl. 22F); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21I).

Etymology: The species epithet is a noun in the genitive case and is named after the second author's wife, Karina Wieczorek.

Distribution: The only known specimen was collected from the Ankarana Reserve in the Antsiranana province (map 9).

Holotype: Male: **Madagascar: Antsiranana:** Ankarana Reserve, 12.91688°S 49.14355°E, 155m, no date provided, J. Vadon and A. Peyrieras (MNHN).

***Toliarus trichrous*,** new species

Plates 3, 7, 10, 13I, 19G, 20J, 21I, 22F; map 9

Diagnosis: Males are recognized from the other species in this genus, *T. karinae*, by the smaller body size, red and black coloration, and more punctate posterior pronotal lobe. Males are most similar to *Tanindrazanus anjozorobeus* and *Tanindrazanus kathrynae*, but the smaller body size, red anteocular region and abdominal sternites (except black pygophore), black postocular region, 6-segmented antenna, and punctate posterior pronotal lobe distinguishes *T. trichrous* from these species.

Description: Small body size (length: 7.22 mm, holotype; 7.22–8.97 mm). COLORATION: Red with black head ventrolaterally below eye, postocular except ventrolateral spot, neck except dorsomedially, anterior pronotal and propleural lobes, prosternum, medial pronotal longitudinal furrow on posterior pronotal lobe, meso- and metapleura, scutellum, apical half of hind femur, hind tibia medially, abdominal sternite VII apically, and pygophore. Hemelytron dark brown, except red corium. VESTITURE: As in generic description. STRUCTURE: Head (pl. 13I): Ventrally with shallow anteromedial depression; postclypeus with relatively deep, narrow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli small, separated by more than diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; pedicel about one-fourth longer than scape. Thorax: Anterior pronotal lobe without distinct anterolateral projections; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); forefemur incrassate; tarsomeres I and II subequal to III; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in lateral view (pl. 20J), apex rounded; BPE as long as basal plate (pl. 22F); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21I).

Etymology: The species epithet is an adjective and is named for the body coloration.

Distribution: Specimens were collected from the southern region of Toliara (map 9).

Discussion: Coloration varies with the posterior pronotal lobe and posterior propleural lobe either uniformly black, black with red lateral margins, or uniformly red. The hind femur may be more extensively black, and the black medial spot on abdominal sternite VII varies in size.

Holotype: Male: **Madagascar: Toliara:** Beza Mahafaly Reserve, Parcelle II near Bellevue, 23.68983°S 44.5755°E, 180 m, 21 Nov 2001–28 Nov 2001, R. Harin'Hala (00006163) (CAS).

Paratypes: **Madagascar: Toliara:** Andohahela Natýl Park, Tsimelahy, Parcelle II, 24.93683°S 46.62666°E, 180 m, 09 Dec 2002–16 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006494) (CAS); 16 Dec 2002–17 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006185, 00006186) (CAS); 15 Feb 2003–26 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 5♂ (00006513–00006517) (CAS); 18 Mar 2003–28 Mar 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006184, 00006519) (USNM); 28 Mar 2003–08 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006155, 00006497) (BMNH); 19 Apr 2003–26 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006168, 00006169) (MNHN); 29 Jun 2003–10 Jul 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006183, 00006518) (AMNH); 17 Aug 2003–24 Aug 2003, M. Irwin, F. Parker, R. Harin'Hala, 5♂ (00006176–00006180) (CAS); 11 Oct 2003–19 Oct 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006162) (SU); 15 Jan 2004–28 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006493) (UCR). Berenty Special Reserve, 8 km NW Amboasary, 25.00666°S 46.30333°E, 85 m, 25 Oct 2002–26 Oct 2002, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006153, 00006156) (CAS); 09 Nov 2002–16 Nov 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006167) (UCR); 30 Nov 2002–07 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006171) (CAS); 14 Dec 2002–16 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006181, 00006182, 00006501) (AMNH); 26 Jan 2003–05 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006507) (SU); 24 Apr 2003–03 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006506) (CAS); 25 May 2003–04 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006202) (USNM); 22 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006490) (BMNH); 30 Nov 2003–07 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006520) (BMNH); 07 Dec 2003–14 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006492) (UCR); 21 Dec 2003–02 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006504, 00006522) (CAS); 13 Jan 2004–23 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006505, 00006510) (MNHN); 04 Feb 2004–15 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006500) (CAS); 02 Mar 2004–11 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006509) (CAS); 05 Apr 2004–15 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006503) (AMNH); 06 Jun 2004–20 Jun 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006489) (CAS); 11 Jul 2004–25 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006511, 00006512, 00006521) (CAS); 07 Aug 2004–22 Aug 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006487, 00006488) (USNM); 22 Aug 2004–01 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006495, 00006496) (SU); 01 Sep 2004–08 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006508) (UCR). Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 10 Jun 2003–19 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006502) (CAS); 08 Nov 2003–15 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00005364) (CAS); 21 Dec 2003–01 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006175, 00006189, 00006190) (MNHN); 24 Mar 2004–04 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006491) (SU); 23 Jun 2004–04 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006157) (BMNH), 1♂ (00006158) (CAS); 04 Jul 2004–18 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006170) (UCR). Beza Mahafaly Reserve, Parcelle II near Bellevue, 23.68983°S 44.5755°E, 180 m, 10 Nov 2001–21 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00006208) (CAS); 04 Dec 2001–11 Dec 2001, M. Irwin, R. Harin'Hala, 1♂ (00006204) (UCR). Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 21 Nov 2001–28 Nov 2001, R. Harin'Hala, 3♂ (00006154, 00006161, 00006188) (CAS); 04 Dec 2001–11 Dec 2001, R. Harin'Hala, 1♂ (00006213) (CAS); 18 Dec 2001–25 Dec 2001, R. Harin'Hala, 2♂ (00006193, 00006203) (SU); 22 Feb 2002–01 Mar 2002, R. Harin'Hala, 1♂ (00045647) (CAS); 29 Apr 2002–19 May 2002, R. Harin'Hala, 1♂ (00006205) (BMNH); 28 Jul 2002–09 Aug 2002, R. Harin'Hala, 1♂ (00006160) (CAS); 09 Sep 2002–20 Sep 2002, R. Harin'Hala, 1♂ (00006209) (CAS); 28 Oct 2002–10 Nov 2002, M.E. Irwin, F.D. Parker, R. Harin'Hala, 1♂ (00006191) (CAS); 10 Nov 2002–22 Nov 2002, R. Harin'Hala, 2♂ (00006199, 00006215) (USNM); 02 Dec 2002–12 Dec 2002, R. Harin'Hala, 3♂ (00006150, 00006151, 00006212) (AMNH); 12 Dec 2002–17 Dec 2002, R. Harin'Hala, 1♂ (00006187) (CAS); 17 Dec 2002–20 Dec 2002, R. Harin'Hala, 1♂ (00006214) (CAS); 20 Dec 2002–24 Dec 2002, R. Harin'Hala, 1♂ (00006164) (UCR); 24 Dec 2002–02 Jan 2003, R. Harin'Hala, 2♂ (00006210, 00006211) (CAS); 09 Jan 2003–23 Jan 2003, R. Harin'Hala, 1♂ (00006192) (CAS); 04 Feb 2003–16 Feb 2003, R. Harin'Hala, 1♂ (00006194) (BMNH); 02 Mar

2003–13 Mar 2003, R. Harin'Hala, 2♂ (00006159, 00006165) (CAS); 13 Mar 2003–23 Mar 2003, R. Harin'Hala, 2♂ (00006197, 00006198) (BMNH); 23 Mar 2003–02 Apr 2003, R. Harin'Hala, 2♂ (00006086, 00006152) (CAS); 02 Apr 2003–10 Apr 2003, R. Harin'Hala, 3♂ (00006166) (SU), 3♂ (00006172–00006174) (CAS); 10 Apr 2003–21 Apr 2003, R. Harin'Hala, 2♂ (00006206, 00006207) (CAS); 21 Apr 2003–29 Apr 2003, R. Harin'Hala, 1♂ (00006196) (UCR). Cap Ste Marie Special Reserve, 74 km S of Tsihombe, 25.58766°S 45.163°E, 37 m, 18 May 2003–26 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006200) (CAS), 1♂ (00006201) (UCR). Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 15 Jan 2003–26 Jan 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00007162) (BMNH), 3♂ (00045213, 00045297, 00045312) (MNHN); 24 Aug 2003–03 Sep 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045633) (CAS); 12 Nov 2003–23 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045242) (UCR); 17 Dec 2003–19 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00007208, 00044928, 00045630) (USNM); 14 Jan 2004–28 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00007185) (AMNH), 6♂ (00044953, 00045131, 00045203, 00045298, 00045597, 00045634) (CAS), 2♂ (00045700, 00045726) (SU). **Unknown:** 1♂ (00006195) (CAS).

Toxopus Bergroth, 1905

Plates 3, 4, 7, 10, 11, 12, 13B, 13J, 13K, 14, 15B, 19H, 19I, 20K, 20L, 21J–L, 22G, 22H, 23E; maps 10–13

Toxopus Bergroth, 1905, 49: 374.

Type species: *Toxopus politus* Bergroth, 1905.

Revised diagnosis: Male recognized by the shiny dark brown to blackish coloration with pale yellow markings, meso- and metasterna not completely separated by distinct transverse suture, dorsal laterotergite II expanded laterally, and laterotergites transversely bicolored. Females recognized by the apterous condition, shiny dark brown to blackish coloration sometimes with pale yellow markings, head about as wide as anterior margin of pronotum, 7-segmented antenna with short vestiture, scape as long as distance between anterior margin of eye and apex of head, eye about half head height, anterior pronotal lobe much longer than posterior lobe, fore- and mid trochanters with small papillae, and abdominal tergites I–III declinate toward posterior with remaining tergites oriented horizontally. This genus is most similar to *Rochonia* Distant, 1913, from which it differs by the relatively smooth head and pronotum, hemelytron reaching or surpassing abdominal apex, and dorsal laterotergite II expanded.

Redescription: **MALE:** Macropterous, medium body size. COLORATION: Shiny dark brown to black with pale yellow markings. VESTITURE: Sparse to dense, semierect to erect, long pale to dark brown setae on head, thorax, legs, corium, and abdomen; setae on tibiae stouter and denser near apex. STRUCTURE: Head (pl. 13B, J, K): Ovoid or subquadrate; shorter than pronotum; clypeal apex not elevated relative to labrum; maxillary plate not reaching dorsal surface of clypeus; postclypeus depressed; distinct constriction between postocular and neck; gula moderately swollen ventrolaterally, not distinctly produced beyond ventral head margin; ocelli present; antennal shield not concealing antennal insertion in lateral view; scape surpassing clypeal apex; flagellum subdivided into BFLA and DFLA; BFLA divided into two pseudosegments; DFLA divided into three pseudosegments; antenna thus appearing 7-segmented; labial segment III subequal to II. Thorax (pl. 15B): Pronotum wider than long, anterior margin distinctly concave, collar distinct; anterior pronotal lobe shorter than posterior lobe, more than half as wide as posterior lobe, relatively smooth; pronotal longitudinal furrow reaching anterior but not posterior margin of pronotum, foveate posteriorly; pronotal transverse furrow distinct; lateral depressions on posterior pronotal lobe distinct; scutellum with two moderately separated apical processes, disc medially depressed; meso- and metasterna not completely separated by distinct transverse suture (pl. 15E); mesosternum with medial and paramedial longitudinal depressions; metasternum medially longitudinally depressed; MGE with deeply depressed meshlike cuticle that extends dorsally in lateral

view (pl. 16A); forefemur slightly to strongly incrassate; fossula spongiosa on fore- and mid tibiae; tarsomeres I and II combined subequal to III; corium restricted to areas adjacent to basal wing veins, with pterostigmalike appearance on anterodistal margin (pl. 17A, C); distal part of R present but not forming cell with M (pl. 17B, C); proximal parts of M and Cu separate (pl. 17A, C); distal part of M extending beyond apical junction of M+Cu (pl. 17A, C); base of M+Cu cell shorter than or as wide as Cu+1A cell (pl. 17B, C). Abdomen: Dorsal laterotergite II expanded; sternites shallowly depressed medially (pl. 18C), intersegmental sutures carinulate; spiracles ovoid; pygophore process subtriangular in lateral view (pl. 20K, L), directed dorsoposteriad, apex rounded; DPS apex rounded (pl. 21J–L). **FEMALE:** Differs from males in the following characteristics: apterous; reduced yellow markings; head larger, about as wide as anterior pronotal margin, shorter or longer than pronotum; postclypeus not depressed (pl. 13A); antennal shield not expanded; antennal vestiture much shorter; scape as long as distance between anterior eye margin and apex of head; ocelli absent; eyes small, about half head height; labial segments II shorter than or subequal to segment III; collar barely distinct; anterior pronotal lobe longer than and as wide as posterior lobe (pl. 15A), without distinct anterolateral projections; pronotal longitudinal furrow reduced to deep medial depression near posterior margin of anterior pronotal lobe (pl. 15A); lateral depressions on posterior pronotal lobe obsolete; scutellum weakly developed; meso- and metasterna platelike with shallow, wide medial longitudinal depression; MGE reduced, shallow, not extending dorsally in lateral view (pl. 16B, C); fore- and mid trochanters with patches of small papillae (pl. 16D, E); hind femur slightly curved in dorsal view; fossula spongiosa larger; dorsal laterotergite II not expanded; abdominal tergites I–III declinate toward posterior, intersegmental sutures carinulate, remaining tergites oriented horizontally, intersegments not carinulate; sternites flat; external genitalia short, platelike (pl. 23E).

Distribution: Species are known from all provinces and in habitats between 7–1360 m elevation. Macrohabitats include tropical dry forests, dwarf littoral forests, low-altitude dense humid forests, low-altitude littoral rainforests, high-altitude rainforests, spiny forests, gallery forests, sclerophyl forests, montane rainforest, dry deciduous forests, and transitional forests.

Discussion: Bergroth (1905) described this genus from a single female specimen. He emphasized the overall head structure and strongly curved hind tibia as diagnostic for this genus. However, head shape and structure is variable among species in some ectrichodiine genera (e.g., *Microstemmatoides* Putshkov, 1985, *Daraxa* Stål, 1859, *Gibbosella*) and the leg armature can vary among and within species. As examples, the presence and location of patches of papillae on the femora and trochanters may differ among species of *Rhiginia* Stål, 1859, males and females of the same species in *Racelda* Signoret, 1863, and apterous and. macropterous forms within species of *Glymmatophora*. Similarly, femoral and tibial spines may vary in presence, size, or number in species of *Glymmatophora*. Finally, the curvature of the hind tibia can vary between species in a genus (straight or slightly curved in *Pothea* Amyot and Serville. 1843, *Katanga* Schouteden, 1903, *Centraspis* Schaum, 1862) and within species (straight or slightly curved in females of *Ectrichodia crux* [Thunberg] 1783). Curvature and robustness of the hind tibia in females of *Toxopus politus* Bergroth, 1905, appears to be fairly extreme, and we found this character variable in two female specimens that we assign to *Toxopus*: one specimen has a more robust and strongly curved hind tibia than the other. We are unable to definitively assign either specimen to *T. politus* based on the original description; the holotype of *T. politus* is missing and could not be examined for confirmation (see discussion for *T. politus*). Comparison of these two specimens with a female with cylindrical head and slender, slightly curved hind tibia

revealed many morphological similarities: apterous, shiny blackish coloration, head about as wide as anterior margin of pronotum, 7-segmented antenna with short vestiture, scape as long as distance between anterior eye margin and apex of head, eyes small, and abdominal tergites I–III declinate toward posterior, among several other features. Given the abundance of morphological similarities between these females and known variability in head shape and leg structure in other Ectrichodiinae genera, the genus is here redescribed to accommodate females with various head shapes and slender, less curved, and unarmed hind tibia. Based on morphology, geographic proximity, and molecules, we also associated the female with the cylindrical head and slender hind legs with males of a new species, *T. griswoldi*, enabling us to describe *Toxopus* males for the first time. Attempts to associate the other two females with conspecific males based on morphology, geography, and molecules failed. These two females remain undescribed for the time being since, based on head shape, presence of a ventral medial depression on the head, and geographic proximity, they could represent females of any of the following species: *T. ampitavananima*, *T. basalis*, *T. brucei*, *T. namoroka*, *T. parkeri*, *T. signoretii*, *T. simulans*, *T. steineri*, *T. tibialis*, and *T. vazimba*.

The monotypic genus *Rochonia* was described by Distant from one macropterous male specimen from the Seychelles in 1913. The holotype of *R. galeatus* Distant, 1913, which is fairly damaged and has the ventral surface not visible, was examined at the BMNH. It is clear that *Rochonia* shares many morphological features with *Toxopus*, while few characters distinguish the two genera (see differential diagnosis for *Toxopus*). Based on these morphological similarities, *Toxopus* may in fact belong to *Rochonia*. We refrain from synonymizing *Toxopus* with *Rochonia* until additional specimens of *Rochonia* become available that will allow examination of ventral characters, antennal segmentation, and intraspecific variation. Future phylogenetic analyses including *Rochonia* and *Toxopus* may also provide support for synonymy.

Identification Key to the Males of Species of *Toxopus*

1. Head cylindrical (pl. 13J) 2
– Head subquadrate (pl. 13A) or ovoid (pl. 13F) 9
2. Head ventrally flat..... 3
– Head with medial depression either restricted to anteocular region or extending to postocular..... 4
3. Pedicel not distinctly curved; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI. .*insignis*, new species
– Pedicel slightly curved; sternal intersegmental sutures carinulate between II and III and laterally between III–VI. . . . *fisheri*, new species
4. Head with ventral anteromedial depression; postocular broad in dorsal view (pl. 13B); sublateral antennal insertion; pronotal transverse suture incomplete, divided by paramedian ridges (pl. 15B) 5
– Head with ventral medial depression extending to postocular; postocular narrow in dorsal view (pl. 13A); dorsal antennal insertion; pronotal transverse suture complete, not divided by paramedian ridges..... ..... *melobrunneus*, new species
5. Posterior pronotal lobe smooth; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI .... *toliara*, new species
– Posterior pronotal lobe striated; sternal intersegmental suture carinulation pattern not as previously mentioned..... 6
6. Synthlipsis width 1.5 times width of eye; sternal intersegmental sutures carinulate between II and III and laterally between III and IV ..... *antsiranana*, new species
– Synthlipsis width two times width of eye; sternal intersegmental suture carinulation pattern not as previously mentioned..... 7
7. Postclypeal depression extending to interocular sulcus; sternal intersegmental sutures carinulate between II and III and laterally between III–V . *ambohitantely*, new species
– Postclypeal depression extending to middle of interocular area (pl. 13B); sternal interseg-

mental suture carinulation pattern not as previously mentioned 8

8. Postclypeal depression relatively broad; ventral margin of labial segment III convex (pl. 13J, D, E, F); sternal intersegmental sutures carinulate between II and III and laterally between III–VII . . . . *italaviana*, new species

– Postclypeal depression narrow; ventral margin of labial segment III straight (pl. 13G–I, K); sternal intersegmental sutures carinulate between II–IV and laterally between IV–VII . . . . . *griswoldi*, new species

9. Anteocular region as long as postocular (pl. 13J). 10

– Anteocular region longer than postocular (pl. 13K) 11

10. Postclypeal depression extending to interocular sulcus; ventral margin of labial segment III straight (pl. 13G–I, K); posterior pronotal lobe striated . . . . . *pallidus*, new species

– Postclypeal depression extending to middle of interocular area; ventral margin of labial segment III convex (pl. 13C–F, J); posterior pronotal lobe smooth . . . . . *farafangana*, new species

11. Head about as long as wide in dorsal view12

– Head longer than wide in dorsal view 16

12. Synthlipsis about width of eye; eye reaching dorsal head surface in lateral view; sternal intersegmental sutures carinulate between II and III and laterally between III–V . . . . . *toamasina*, new species

– Synthlipsis at least 1.5 times width of eye; eye not reaching dorsal head surface in lateral view; carinulation patterns on the sternal intersegmental sutures not as previously mentioned. 13

13. Synthlipsis about 1.5 times width of eye. . 14

– Synthlipsis about two times width of eye . . 15

14. Head ventrally with anteromedial depression; eye not distinctly reaching ventral head surface in lateral view; sternal intersegmental sutures carinulate between II–VI . . . . . *tibialis*, new species

– Head with medial depression extending along entire ventral head surface; eye reaching or nearly reaching ventral head surface in lateral view; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI. . . . . *basalis*, new species

15. Posterior pronotal lobe weakly transversely striated; sternal intersegmental sutures carinulate between II–VI . . . . . *parkeri*, new species

– Posterior pronotal lobe smooth; sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI . . . . . *brucei*, new species

16. Only sternal intersegmental suture between II–III carinulate 17

– Multiple sternal intersegmental sutures carinulate 18

17. Synthlipsis about two times width of eye; postocular broad in dorsal view (pl. 13B); posterior pronotal lobe smooth . . . . . *miandritsara*, new species

– Synthlipsis about 1.5 times width of eye; postocular narrow in dorsal view (pl. 13A); posterior pronotal lobe weakly transversely striated. . . . . *simulans*, new species

18. Synthlipsis at least 1.5 times width of eye; eye not distinctly reaching dorsal head surface 19

– Synthlipsis about width of eye; eye reaching or nearly reaching dorsal head surface. . . . . *signoretii* (Reuter), new combination

19. Synthlipsis about two times width of eye; anterior pronotal lobe with distinct, small anterolateral protuberances (pl. 15B); posterior pronotal lobe smooth 20

– Synthlipsis about 1.5 times width of eye; anterior pronotal lobe without distinct anterolateral protuberances; posterior pronotal lobe weakly transversely striated. . . . . *ampitavananima*, new species

20. Ventral surface of labial segment III straight (pl. 13G–I, K); sternal intersegmental sutures carinulate between II–VI and laterally between VI and VII 21

– Ventral surface of labial segment III convex (pl. 13C–F, J); sternal intersegmental sutures carinulate between II–IV and laterally between IV–VI. . . . . *steineri*, new species

21. Interocular sulcus near hind margin of eye (pl. 13B); head, including postclypeal depression, anterior pronotal lobe, and legs reddish brown . . . . . *namoroka*, new species
– Interocular sulcus anterior to hind margin of eye; head dark brown with postclypeal depression and labium pale; anterior pronotal lobe generally dark brown; legs dark brown and pale . . . . . *vazimba*, new species

Identification Key to the Females of Species of *Toxopus*

1. Hind tibia distinctly curved, armed with small papillae (pl. 16D, E); shiny dark brown to black; basal part of scape and antennal segments V–VII entirely, except basal half of V, pale; dorsal surface of femora basally, foretibia ventrally except basally and apically, rings on mid and hind tibiae, and tarsi pale to brown (based on original description) . . . . . *politus* Bergroth
– Hind tibia not distinctly curved, unarmed; shiny blackish with extensive pale to brown markings . . . . . *griswoldi*, new species

***Toxopus ambohitantely*, new species**

Plates 3, 7, 10, 13J; map 11

Diagnosis: Males are recognized among other *Toxopus* species by the moderately dense vestiture, coloration, elongate cylindrical head in lateral view, relatively deep postclypeal depression that reaches the interocular sulcus, sublateral antennal insertion, labial segment III ventrally convex, and intersegmental sutures carinulate between sternites II and III and laterally between III–V. This species is similar to *T. italaviana*, *T. griswoldi*, *T. insignis*, *T. fisheri*, *T. antsiranana*, and *T. toliara*, but is distinguished from them by the intersegmental sutures carinulate between sternites II and III and laterally between III–V, subtriangular pygophore process, and endosoma medially sclerotized.

Description: **MALE:** Body length: 9.93 mm (holotype), 9.83–10.18 mm. COLORATION: Blackish with pale yellow corium basally, trochanters, femora except dorsoapical half, fore- and mid tibiae medially, hind tibia subbasally and medially, anterior half of laterotergites, abdominal sternites medially (except anterior, posterior, and lateral margins), sternites II–VI anterolaterally, and lateral margin of sternite VII. Antennal segments VI and VII, hemelytron, and tarsi brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: Head (pl. 13J): Cylindrical in lateral view; longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region longer than postocular; postclypeus with deep, narrow medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus posterior to hind margin of eye; postocular broad in dorsal view (pl. 13B); ocelli small, located on shallow median tubercle, separated by a distance less than or equal to diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-fourth longer than scape, slightly curved; labium slender; labial segment III ventrally convex. Thorax: Anterior pronotal lobe with relatively small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded, sinuate, or medially notched; intersegmental sutures carinulate between sternites II and III and laterally between III–V; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion ovate; endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Ambohitantely, Madagascar.

DISTRIBUTION: Antananarivo, Antsiranana, Mahajanga, and Toamasina provinces (map 11).

DISCUSSION: In some specimens, the base of the scape, antennal segments VI and VII, scutellar processes, femora, tibiae, and corium are more pale yellow than dark brown. The labium may be light brown.

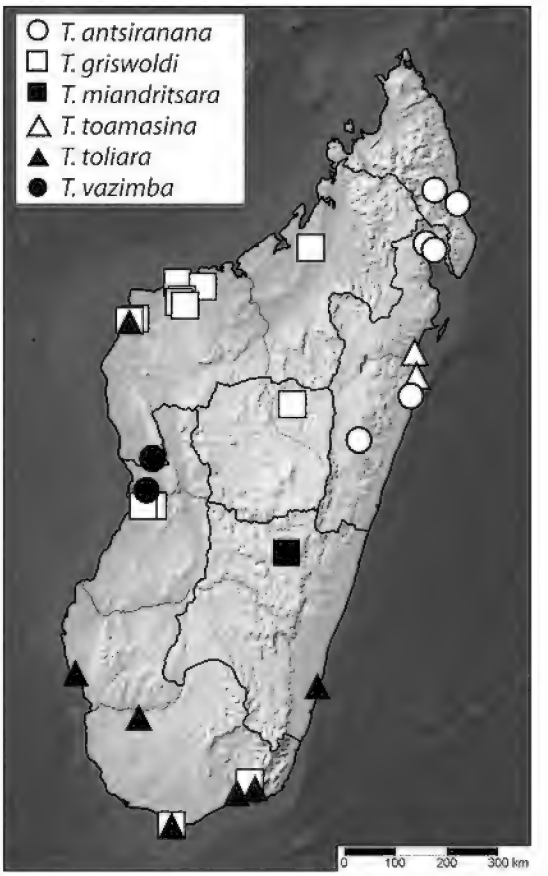
HOLOTYPE: Male: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 15 Oct 2004–01 Nov 2004, M. Irwin, F. Parker, R. Harin'Hala (00006782) (CAS).

PARATYPES: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 31 Oct 2003–07 Nov 2003, M. Irwin, R. Harin'Hala, 3♂ (00006788–00006790) (CAS); 05 Mar 2004–19 Mar 2004, M. Irwin, R. Harin'Hala, 1♂ (00006791) (CAS); 19 Mar 2004–28 Mar 2004, M. Irwin, R. Harin'Hala, 1♂ (00006778) (SU); 15 Oct 2004–01 Nov 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006779–00006781) (USNM), 2♂ (00006783, 00006784) (CAS), 3♂ (00006785–00006787) (MNHN); 01 Nov 2004–14 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00006792) (UCR); 17 Apr 2005–26 Apr 2005, M. Irwin, R. Harin'Hala, 2♂ (00044905, 00045071) (AMNH), 2♂ (00045364, 00045369) (BMNH). **Antsiranana:** Parc National Montagne d'Ambre, 12.51666°S 49.18333°E, 975 m, 04 Mar 2001–19 Mar 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00006120) (CAS). Sakalava Beach, dwarf littoral forest, 12.26277°S 49.3975°E, 10 m, 15 Feb 2001–06 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006794) (USNM); 22 Apr 2001–27 Apr 2001, M. Irwin, R. Harin'Hala, 1♂ (00045583) (SU). **Mahajanga:** Reserve Speciale de Bemarivo, 23.8 km 223° SW Besalampy, 16.925°S 44.36833°E, 30 m, 19 Nov 2002–23 Nov 2002, Fisher et al., 1♂ (00006793) (CAS). **Toamasina:** 7 km SE of Andasibe National Park headquarters, 18.96266°S 48.45266°E, 1050 m, 07 Jan 2001–22 Jan 2001, M. Irwin, R. Harin'Hala, 1♂ (00007142) (CAS). Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 01 Sep 2001–05 Sep 2001, M. Irwin, R. Harin'Hala, 1♂ (00006795) (MNHN); 19 Sep 2001–26 Sep 2001, M. Irwin, R. Harin'Hala, 1♂ (00045254) (UCR).

Toxopus ampitavananima, new species

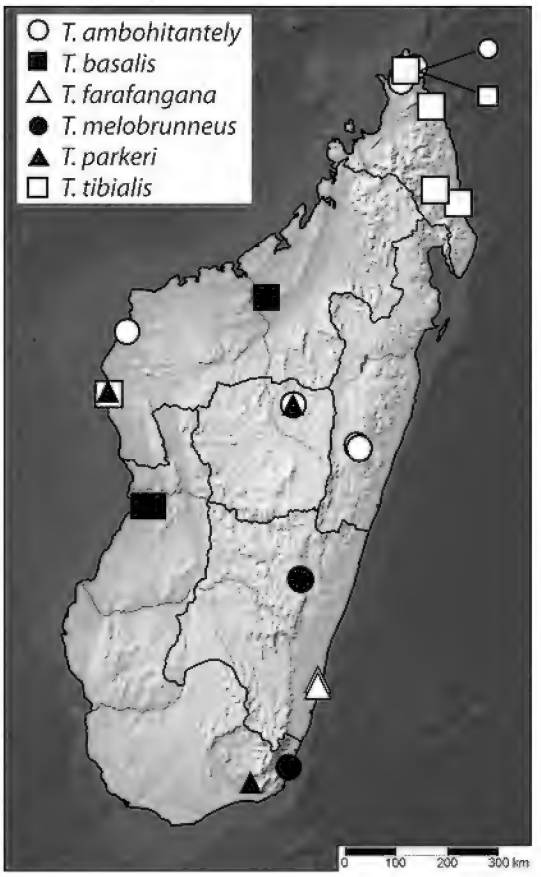
Plates 3, 7, 10, 22G; map 12

DIAGNOSIS: Males are recognized among other *Toxopus* species by the subquadrate head shape in lateral view that is longer than wide in dorsal view, anterior pronotal lobe without anterolateral protuberances, and intersegmental sutures carinulate between sternites II and III and laterally between III–VI. This species is similar to *T. vazimba*, but the smaller synthlipsis width, interocular sulcus located near the hind margin of the eye, eye one-half of the head length in lateral view, anterior pronotal lobe lacking distinct anterolateral protuberances, striated posterior pronotal lobe, intersegmental sutures carinulate between sternites II and III and laterally between III–VI, and BPE as long as the basal plate distinguish *T. ampitavananima* from *T. vazimba*.



MAP 10. Localities of *Toxopus antsiranana*, *T. griswoldi*, *T. miandritsara*, *T. toamasina*, *T. toliara*, and *T. vazimba*.

DESCRIPTION: **MALE:** Body length: 10.67 mm (holotype), 10.50–11.91 mm. COLORATION: Blackish with pale yellow mandibular and maxil-



MAP 11. Localities of *Toxopus ambohitantely*, *T. basalis*, *T. farafangana*, *T. melobrunneus*, *T. parkeri*, and *T. tibialis*.

lary plates dorsally, postclypeal medial longitudinal depression, anterolateral area anterior of interocular sulcus, scape basally, pedicel basally, antennal segment III basally, antennal segment IV apically, antennal segments VI and VII, anterior pronotal lobe anterolaterally, posterior margin of posterior pronotal lobe, stridulatory process, meso- and metasterna, scutellar processes apically, corium basally, coxae, trochanters, forefemur basally and ventrally, mid femur basally and subapically, hind femur except medially, foretibia except basally, mid tibia except subbasally, hind tibia apically, tarsi, anterior half of laterotergites, abdominal sternites II–V except medially and laterally, ventrolateral anterior margin of sternite VI, and lateral margin of abdomen except apex of sternite VII. Labium and remainder of pronotum brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: Head: Subquadrate in lateral view (pl. 13K); longer than wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about half of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe without anterolateral projections; posterior pronotal lobe weakly to strongly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly to strongly transversely striated; hemelytron reaching or surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III and laterally between III–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21K); endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Ampitavananima Forest, Madagascar.

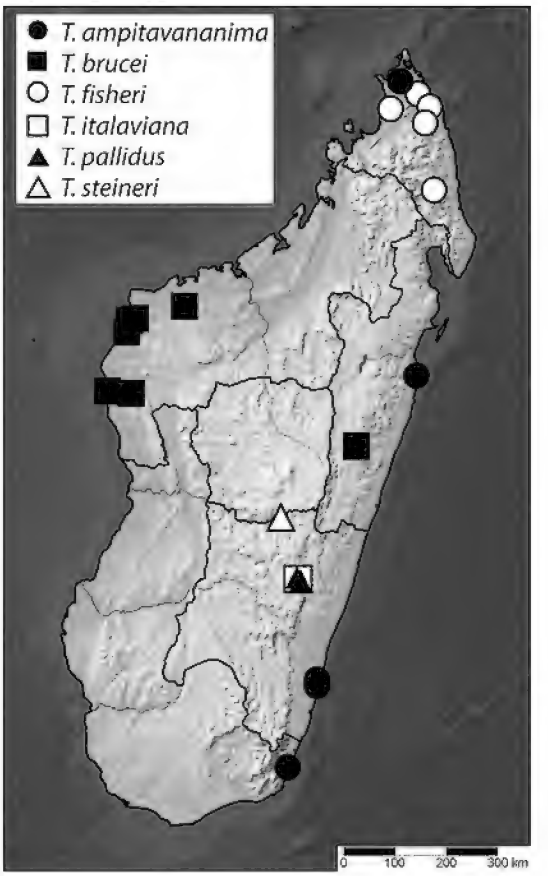
Distribution: Antsiranana, Fianarantsoa, Toamasina, and Toliara provinces (map 12).

Discussion: The coloration in this species is variable: the pale yellow coloration on the head and scutellum may be reduced, the anterior pro-

notal lobe may have more pale yellow coloration throughout, the posterior pronotal lobe may be dark brown, and the entire ventromedial abdominal surface may be pale yellow or nearly so.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 14 Apr 2007–21 Apr 2007, M. Irwin, F. Parker, R. Harin'Hala (00006768) (CAS).

PARATYPES: **Madagascar: Antsiranana:** Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 04 Mar 2001–19 Mar 2001, M. Irwin, R. Harin'Hala, 1♂ (00006719) (CAS). **Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 13 Jan 2007–20 Jan 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006771–00006773) (CAS); 04 Feb 2007–10 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006762–00006764) (CAS); 10 Feb 2007–17 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006766) (UCR); 17 Feb 2007–24 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006740) (CAS); 10 Mar 2007–17 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 4♂ (00006743–00006746) (BMNH), 2♂ (00006755, 00006756) (UCR); 17 Mar 2007–24 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006741) (SU); 24 Mar 2007–31 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006769) (CAS); 07 Apr 2007–14 Apr 2007, M. Irwin, F. Parker, R. Harin'Hala, 4♂ (00006737–00006739, 00006753) (MNHN), 1♂ (00006754) (CAS); 21 Apr 2007–29 Apr 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006761) (CAS); 06 May 2007–14 May 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006770) (USNM); 14 May 2007–21 May 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006775) (USNM); 21 May 2007–25 May 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006752) (USNM); 25 May 2007–02 Jun 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006767) (USNM); 02 Jun 2007–10 Jun 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006760) (CAS); 01 Jul 2007–07 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006765) (CAS); 14 Jul 2007–19 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006742) (CAS); 19 Jul 2007–23 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006747, 00006748) (SU); 23 Jul 2007–28 Jul 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006121, 00006735) (CAS); 13 Sep 2007–20 Sep 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006776) (CAS); 27 Sep 2007–04 Oct 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006774) (CAS); 04 Oct 2007–11 Oct 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006751) (CAS); 11 Oct 2007–18 Oct 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006758, 00044833) (AMNH); 25 Oct 2007–08 Nov 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006736) (AMNH); 03 Jan 2008–09 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006731) (AMNH); 09 Jan 2008–17 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006750) (CAS); 17 Jan 2008–24 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006749) (CAS); 02 Mar 2008–08 Mar 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006759) (SU); 16 Mar 2008–22 Mar 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006732) (UCR). Manombo Special Reserve camp site, 32 km SSE of Farafangana, 23.02183°S 47.72°E, 36 m, 26 Dec 2004–05 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00045458) (CAS); 10 May 2005–22 May 2005, M. Irwin, R. Harin'Hala, 2♂ (00045398, 00045685) (CAS); 22 May 2005–06 Jun 2005, M. Irwin, R. Harin'Hala, 1♂ (00045378) (SU); 10 Jul 2005–27 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00007067) (UCR). **Toamasina:** Mobot



MAP 12. Localities of *Toxopus ampitavananima*, *T. brucei*, *T. fisheri*, *T. italaviana*, *T. pallidus*, and *T. steineri*.

Site, Analalava 7 km SW of Foulpointe, 17.69333°S 49.46027°E, 18 m, 29 Feb 2008–07 Mar 2008, M. Irwin, R. Harin'Hala, 1♂ (00044815) (CAS). **Toliara:** Forêt Ivohibe 55.0 km N Tolagnaro, 24.56888°S 47.20388°E, 200 m, 02 Dec 2006–04 Dec 2006, B.L. Fisher et al., 1♂ (00006733) (CAS). **Unknown:** 1♂ (00006757) (CAS).

Toxopus antsiranana, new species
Plates 3, 7, 10; map 10

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the coloration, elongate cylindrical head in lateral view, synthlipsis 1.5 times width of an eye, antenna inserted sublaterally on the head, labial segment III ventrally straight, and intersegmental sutures carinulate between sternites II and III and laterally between III and IV. Males are similar to males of *T. italaviana*, *T. griswoldi*, *T. insignis*, *T. fisheri*, and *T. toliara*, but are distinguished by the smaller synthlipsis width and intersegmental sutures carinulate between sternites II and III and laterally between III and IV.

Description: **MALE:** Body length: 12.21 mm (holotype), 11.10–12.21 mm. COLORATION: Blackish with pale yellow mandibular plates dorsally, postclypeus between antennifers, antennifer, labial segment IV except basally, scape basally, pedicel basally, base of antennal segment III, antennal segment VII, metasternum laterally, corium basally, mid and hind coxae posteriorly, trochanters, forefemur basally and subapically, mid and hind femora except medially, foretibia medially and subbasally, mid tibia subbasally and subapically, hind tibia basally and subapically, tarsi, anterior half of laterotergites, and abdominal sternites medially and anterolaterally. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli small, located on shallow median tubercle (pl. 13J), separated by a distance less than or equal to diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-fourth longer than scape, slightly curved; labium slender; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded or sinuate; intersegmental sutures carinulate between sternites II and III and laterally between III and IV; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21K); endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21J, K).

Etymology: The species epithet is a noun in apposition and is named after the Antsiranana province in Madagascar, where the type specimen was collected.

Distribution: Toamasina and southern region of Antsiranana provinces (map 10).

Discussion: Coloration varies with the dorsal area between antennifers sometimes brown.

Holotype: Male: **Madagascar: Antsiranana:** Forêt Ambanitaza, 26.1 km 347° Antalaha, 14.67944°S 50.18361°E, 240 m, 26 Nov 2004, B.L. Fisher (00044804) (CAS).

Paratypes: **Madagascar: Antsiranana:** Forêt Ambanitaza, 26.1 km 347° Antalaha, 14.67944°S 50.18361°E, 240 m, 26 Nov 2004, B.L. Fisher, 1♂ (00045129) (CAS). Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 25 Dec 2004–30 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00044835) (CAS); 05 Jan 2005–10

Jan 2005, M. Irwin, R. Harin'Hala, 3♂ (00006128, 00006970, 00007099) (UCR); 25 Feb 2005–04 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00045652) (CAS); 18 Mar 2005–25 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00006098) (CAS); 25 Mar 2005–04 Apr 2005, M. Irwin, R. Harin'Hala, 1♂ (00006100) (SU); 18 May 2005–30 May 2005, M. Irwin, R. Harin'Hala, 1♂ (00007189) (SU). **Toamasina:** Fampanambo, 15.37550°S 49.62175°E, 108 m, Feb 1959, J. Vadon, 2♂, (MRAC); Feb 1961, J. Vadon, 2♂, (MRAC). Ivoloina Zoological Park, 12 km NW of Toamasina, 18.05933°S 49.35790°E, 29 m, 16 Nov 2000 – 20 Nov 2000, Dolin and Andreeva, 1♂ (TLMF). Nosy Mangabe, 15.49324°S 49.76776°E, 266 m, 27 Dec 2003, R. Dolin, 1♂ (TLMF). Périnet (Andasibe), 18.82666°S 48.44778°E, 1119 m, 19 Dec 2001 – 31 Dec 2001, V. Dolin, 1♂ (TLMF). **Unknown:** 1♂ (00007191) (CAS).

Toxopus basalis, new species

Plates 3, 7, 10, 22H; map 11

Diagnosis: Males recognized among other species in *Toxopus* by the coloration, sparse vestiture, head as long as wide, synthlipsis 1.5 times width of an eye, interocular sulcus anterior to the hind margin of the eye, eye reaching the ventral head margin, striated posterior pronotal lobe, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI. Males are similar to males of *T. steineri*, *T. namoroka*, and *T. vazimba*, but differs from these species by the characters mentioned. This species is most similar to *T. brucei,* but is distinguished by the smaller width of the synthlipsis relative to the eye, interocular sulcus anterior to the hind margin of the eye, larger eye in lateral view, eye not reaching ventral head margin, and striated posterior pronotal lobe.

Description: **MALE:** Body length: 13.01 mm (holotype), 11.49–13.01 mm. COLORATION: Blackish with pale yellow postclypeal medial longitudinal depression, labial segment IV, scape basally, meso- and metasterna, corium basally, mid and hind coxae, trochanters, forefemur ventrally and basally, mid and hind femora basally, tibiae medially, tarsi, anterior half of laterotergites, abdominal sternites II–VI medially (except at margins of II and III and posteromedial spots on III–VI), and anterolateral spots on sternites. VESTITURE: Very sparse; other features as in generic description. STRUCTURE: Head: Subquadrate in lateral view (pl. 13K); as long as wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus anterior to hind margin of eye; postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about half of head length, not reaching dorsal head surface, reaching ventral head surface; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; hemelytron surpassing tergite VII and not reaching, reaching or surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is an adjective in the nominative case and is named for the pale basal part of the femora.

Distribution: Mahajanga and northern region of Toliara provinces (map 11).

Discussion: The coloration of the medial longitudinal depression on the postclypeus is narrowly or broadly pale yellow in some specimens. The variability of antennal color patterns could not be fully assessed because parts of the

antennae are missing in most specimens. In one specimen, the basal antennal segments are light brown with segments V–VII pale yellow. This may be a variant as all other specimens have a dark brown to black scape and pedicel. It is likely that segments V–VII are always pale yellow.

HOLOTYPE: Male: **Madagascar: Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 03 Dec 2008–11 Dec 2008, M. Irwin, R. Harin'Hala (00045571) (CAS).

PARATYPES: **Madagascar: Mahajanga:** 160 km N of Maevatanana on RN 04, Ampijoroa National Park, 16.31933°S 46.81333°E, 43 m, 07 Feb 2005–19 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045511) (CAS). **Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.66533°E, 128 m, 16 Oct 2008–24 Oct 2008, M. Irwin, R. Harin'Hala, 1♂ (00045574) (CAS); 09 Nov 2008–17 Nov 2008, M. Irwin, R. Harin'Hala, 1♂ (00044958) (CAS); 17 Nov 2008–25 Nov 2008, M. Irwin, R. Harin'Hala, 2♂ (00007161, 00045159) (USNM); 19 Dec 2008–27 Dec 2008, M. Irwin, R. Harin'Hala, 1♂ (00044937) (UCR). Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 30 Oct 2007–06 Nov 2007, M. Irwin, R. Harin'Hala, 2♂ (00006972, 00006975) (BMNH), 1♂ (00006977) (CAS); 22 Nov 2007–30 Nov 2007, M. Irwin, R. Harin'Hala, 2♂ (00007073, 00044898) (CAS), 2♂ (00045223, 00045525) (SU); 17 Nov 2008–25 Nov 2008, M. Irwin, R. Harin'Hala, 1♂ (00045070) (CAS); 25 Nov 2008–03 Dec 2008, M. Irwin, R. Harin'Hala, 1♂ (00045705) (UCR). **Unknown:** 1♂ (00045556) (CAS).

Toxopus brucei, new species

Plates 3, 7, 10; map 12

DIAGNOSIS: Males recognized among other species in this genus by the coloration, sparse vestiture, head as long as wide, smooth posterior pronotal lobe, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI. This species is similar to *T. steineri*, *T. namoroka*, and *T. vazimba*, but differs from these species by the features mentioned. This species is most similar to *T. basalis*, from which it differs by the larger synthlipsis width, interocular sulcus near the hind margin of the eye, smaller eye width in lateral view, eye not reaching ventral head margin, and smooth posterior pronotal lobe.

DESCRIPTION: **MALE:** Body length: 12.61 mm (holotype), 11.00–12.70 mm. COLORATION: Blackish with pale yellow scape basally, antennal segments VI and VII, corium basally, trochanters, forefemur ventrally, mid and hind femora basally, tibiae medially, tarsi, anterior half of laterotergites, abdominal sternites III–VI medially except at margins, and anterolateral spots on sternites. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Subquadrate in lateral view (pl. 13K); as long as wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe smooth; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded or sinuate; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

ETYMOLOGY: This species epithet is a noun in the genitive case and is named in memoriam after the senior author's uncle, Thomas Allen Bruce.

Distribution: Mahajanga and south-central region of Toamasina provinces (map 12).

Discussion: The coloration is slightly variable with antennal segment V pale yellow, the corium, except basally, brown, the meso- and metasterna and sternite II with a medial yellow spot, and the medial spots on the sternites are not be bordered by dark brown margins.

Holotype: Male: **Madagascar: Mahajanga:** Besalampy District, Analangidro dry forest, 7 km NE of Besalampy, 16.6915°S 44.5235°E, 09 Oct 2007–16 Oct 2007, M. Irwin, R. Harin'Hala (00007133) (CAS).

Paratypes: **Madagascar: Mahajanga:** Besalampy District, Analangidro dry forest, 7 km NE of Besalampy, 16.6915°S 44.5235°E, 61 m, 02 Oct 2007–09 Oct 2007, M. Irwin, R. Harin'Hala, 1♂ (00007039) (CAS); 09 Oct 2007–16 Oct 2007, M. Irwin, R. Harin'Hala, 1♂ (00007217) (SU); 14 Dec 2007–21 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00045338) (UCR). Besalampy District, Marofototra dry forest, 17 km W of Besalampy, 16.72166°S 44.42366°E, 52 m, 26 Nov 2007–03 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00044822) (CAS), 1♂ (00044972) (BMNH); 10 Dec 2007–17 Dec 2007, M. Irwin, R. Harin'Hala, 2♂ (00007043, 00007156) (AMNH), 2♂ (00007160, 00007170) (USNM), 2♂ (00007182, 00007223) (CAS), 1♂ (00045011) (BMNH); 17 Dec 2007–24 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00045155) (SU). Besalampy District, Marofototra palm forest, 17 km W of Besalampy, 16.71666°S 44.41666°E, 11 m, 10 Dec 2007–17 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00045286) (CAS). Maintirano District Asondrodava dry forest, 15 km N of Maintirano, 17.96533°S 44.0355°E, 61 m, 03 Dec 2007–10 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00006140) (CAS); 10 Dec 2007–17 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00007012) (UCR). Maintirano District, 50 km E of Maintirano, 18.004°S 44.452°E, 274 m, 25 Oct 2007–01 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007193) (CAS). Namoroka village, Befatika Andranovory, 7 km NW Vilanandro village, 16.47333°S 45.39133°E, 122 m, 09 Nov 2007–16 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007131) (CAS). Reserve Speciale de Bemarivo, 23.8 km 223° SW Besalampy, 16.925°S 44.36833°E, 30 m, 19 Nov 2002–23 Nov 2002, Fisher et al., 1♂ (00006149) (CAS). **Toamasina:** Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 05 Sep 2001–19 Sep 2001, M. Irwin, R. Harin'Hala, 1♂ (00044971) (CAS).

Toxopus farafangana, new species

Plates 3, 7, 10; map 11

Diagnosis: Males are recognized among other *Toxopus* species by the coloration, ovoid head shape in lateral view, anteocular region as long as postocular, broad postocular, labial segment III ventrally convex, smooth posterior pronotal lobe, and BPE shorter than the basal plate. Males are similar to *T. pallidus*, but the dark brown to blackish posterior propleural lobe and thoracic sterna, predominately dark brown to blackish ventral abdominal surface, interocular sulcus near the hind margin of the eye, labial segment III ventrally convex, smooth posterior pronotal lobe, and BPE shorter than the basal plate distinguish *T. farafangana* from *T. pallidus*.

Description: **MALE:** Body length: 10.19 mm (holotype), 9.05–10.66 mm. COLORATION: Blackish with pale yellow anterior margin of antennifer, antennal segment V (except basally) and VI and VII, corium basally, mid and hind trochanters, forefemur ventrally, mid and hind femora basally and subapically, foretibia subbasally and apically, mid and hind tibiae apically and medially, tarsi, anterior half of laterotergites, small posterior paramedian stripes on abdominal sternites II–VII, lateral margin of sternites II and III, and anterolateral margin of sternites IV–VII. Labium except basal two-thirds of segment II, posterior pronotal lobe, and remainder of corium brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region as long as postocular (pl. 13J); postclypeus with deep, broad medial longitudinal depression to middle of interocular area; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular moderately broad in dorsal view (pl. 13B); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-

fourth longer than scape, slightly curved; labium slender; labial segment III shorter than II, ventrally convex (pl. 13J). THORAX: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore, apex rounded; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion ovate; endosoma medially sclerotized (pl. 21L).

ETYMOLOGY: The species epithet is a noun in apposition and is named after a locality near which known specimens were collected.

DISTRIBUTION: Southeastern region of the Fianarantsoa province (map 11).

DISCUSSION: In some specimens, the coloration is slightly variable with the posterior pronotal lobe dark brown and the abdominal ventrolateral pale yellow spots sometimes larger on some sternites or absent.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 17 Feb 2007–24 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala (00007034) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 13 Jan 2007–20 Jan 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00044948, 00044974) (CAS); 20 Jan 2007–26 Jan 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006147, 00007265) (CAS); 26 Jan 2007–04 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00044798, 00045114) (CAS), 2♂ (00045438, 00045524) (BMNH); 26 Jan 2007–04 Feb 2007, M. Irwin, R. Harin'Hala, 1♂ (00045049) (UCR); 04 Feb 2007–10 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00007080, 00007207) (CAS); 17 Feb 2007–24 Feb 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00007230) (SU); 24 Feb 2007–03 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045346) (CAS); 03 Mar 2007–10 Mar 2007, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00007173, 00007175, 00007252) (USNM); 06 Sep 2007–13 Sep 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00007052) (CAS); 08 Nov 2007–22 Nov 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045221) (SU); 20 Dec 2007–27 Dec 2007, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00045003, 00045332) (AMNH); 03 Jan 2008–09 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044965) (CAS); 09 Jan 2008–17 Jan 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044938) (UCR); 16 Mar 2008–22 Mar 2008, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006729, 00044968) (CAS). Manombo Special Reserve camp site, 32 km SSE of Farafangana, 23.02183°S 47.72°E, 36 m, 12 Nov 2004–23 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00045531) (CAS); 15 Dec 2004–26 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00044890) (SU); 16 Jan 2005–20 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00045258) (UCR).

Toxopus fisheri, new species

Plates 3, 7, 10, 19H, 20K, 21J; map 12

DIAGNOSIS: Males are recognized among other species in this genus by the sparse vestiture, coloration, elongate cylindrical head in lateral view, ventrally flat head surface, sublateral antennal insertion, labial segment III ventrally straight, and intersegmental sutures carinulate between sternites II and III and laterally between III–VI. This species is similar to *T. italaviana*, *T. griswoldi*, *T. antsiranana*, and *T. toliara*, but differs from these species by the ventrally flat head surface. *Toxopus fisheri* are also similar to *T. insignis*, from which it differs by the dark brown to blackish postclypeal depression, pale yellow maxillary plates and antennifers, and intersegmental sutures carinulate between sternites II and III and laterally between III–VI.

DESCRIPTION: **MALE:** Body length: 10.19 mm (holotype), 9.84–11.09 mm. COLORATION: Blackish with pale yellow maxillary plates dorsally, antennifer, scape basally, pedicel basally, base of antennal segment III, antennal segment VII, corium basally, coxae, trochanters, forefemur basally and subapically, mid and hind femora except medially, foretibia medially except lateral spots, mid and hind tibiae subbasally and medially, tarsi, laterotergites II and VII, anterior

half of laterotergites III–VI, and abdominal sternites laterally and medially except intersternal sutures. Antennal segments V, VI, and apex of VII and labium brown. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally flat; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli small, located on shallow median tubercle (pl. 13J), separated by a distance less than or equal to diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about two-fifths longer than scape, slightly curved; labium slender; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III and laterally between III–VI; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), surpassing dorsal margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion ovate (pl. 21J); endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21J).

Etymology: The species epithet is a noun in the genitive case and is named after Brian Fisher, who collected the majority of specimens examined for this species.

Distribution: Antsiranana province (map 12).

Discussion: The coloration varies with the small medial longitudinal stripe on the postclypeus, meso- and metasterna, and mid tibia medially pale yellow in some specimens.

Holotype: Male: **Madagascar: Antsiranana:** Forêt de Binara, 7.5 km 230° SW Daraina, 13.255°S 49.61666°E, 375 m, 01 Dec 2003, B.L. Fisher (00045439) (CAS).

Paratypes: **Madagascar: Antsiranana:** Forêt Bekaraoka, 6.8 km 60° ENE Daraina, 13.00277°S 49.01166°E, 150 m, 07 Dec 2003, B.L. Fisher, 1♂ (00045028) (UCR), 1♂ (00045100) (SU), 2♂ (00045143, 00045592) (CAS). Forêt d'Ampondrabe, 26.3 km 10° NNE Daraina, 12.97°S 49.7°E, 175 m, 10 Dec 2003, B.L. Fisher, 1♂ (00045087) (CAS), 2♂ (00045141, 00045148) (SU), 1♂ (00045636) (UCR). Forêt de Binara, 7.5 km 230° SW Daraina, 13.255°S 49.61666°E, 375 m, 01 Dec 2003, B.L. Fisher, 1♂ (00045469) (CAS). Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 15 Dec 2004–20 Dec 2004, M. Irwin, R. Harin'Hala, 1♂ (00006969) (CAS); 05 Jan 2005–10 Jan 2005, M. Irwin, R. Harin'Hala, 1♂ (00006968) (UCR). Rés. Analamerana, 28.4 km 99° Anivorano-Nord, 12.74666°S 49.49472°E, 60 m, 05 Dec 2004, B.L. Fisher, 1♂ (00045431) (CAS).

Toxopus griswoldi, new species

Plates 3, 4, 7, 10, 23E; map 10

Diagnosis: Males recognized among other *Toxopus* species by the small body size, sparse vestiture, coloration, elongate cylindrical head in lateral view, sublateral antennal insertion, labial segment III ventrally straight, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VII. In addition to the generic diagnostic characters, the slender, slightly curved hind tibia distinguishes females of this species from other known *Toxopus* females. Males are similar to *T. italaviana*, *T. insignis*, *T. fisheri*, *T. antsiranana*, and *T. toliara*, but differs from these species by the small body size. The sparse vestiture further distinguishes this species from *T. italaviana*, *T. antsiranana*, and *T. toliara*, while the intersegmental sutures carinulate between sternites II–IV and laterally between IV–VII differentiate *T. griswoldi* from *T. insignis* and *T. fisheri*.

Description: **MALE:** Body length: 9.28 mm (holotype), 8.74–9.76 mm. COLORATION: Blackish with pale yellow clypeus; antennifer;

scape except apically, antennal segment VII except apically, collar, posterolateral pronotal margins, meso- and metasterna medially, scutellar processes, corium basally, coxae, trochanters, forefemur basally and subapically, mid and hind femora except medially, tibiae medially, tarsi, laterotergite II, anterior area of laterotergites III–VII, and abdominal sternites medially and laterally. Antennal segment VI and apex of VII and labium brown. VESTITURE: Very sparse; other features as in generic description. STRUCTURE: Head: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli small, located on shallow median tubercle (pl. 13J), separated by diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-fourth longer than scape, slightly curved; labium slender; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VII; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21K); endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21J, K).

FEMALE: Body length: 11.75 mm; In addition to characters mentioned in the generic description: STRUCTURE: Head: Synthlipsis about 3.5 times width of eye. Thorax: Hind tibia slender, slightly curved. Abdomen: Intersegmental sutures carinulate laterally between sternites II–VI; external genitalia as in plate 23E; bursa copulatrix membranous, damaged; vermiform gland and lateral spermatheca missing.

Etymology: The species epithet is a noun in the genitive case and is named after Charles Griswold, who collected the only known female specimen known for this species.

Distribution: Mahajanga, Toliara, and the northern area of the Antananarivo provinces (map 10).

Discussion: Some specimens have pale yellow mandibular plates. The female specimen was associated with males based on morphology, geographic proximity, and molecular data (COI pairwise genetic distance 0.76%).

Holotype: Male: **Madagascar: Toliara:** Cap Ste Marie Special Reserve, 74 km S of Tsihombe, 25.58766°S 45.163°E, 37 m, 23 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala (00045173) (CAS).

Paratypes: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 28 Dec 2003–10 Jan 2004, M. Irwin, R. Harin'Hala, 1♂ (00045139) (CAS); 14 Nov 2004–29 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00045132) (UCR). **Mahajanga:** Ambovomamy Belambo, 20 km NW of Port Berger, 15.45116°S 47.61333°E, 33 m, 28 Oct 2007–06 Nov 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045234) (CAS); 23 Nov 2007–08 Dec 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044962) (SU); 08 Dec 2007–11 Dec 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045233) (AMNH); 26 Oct 2008–01 Nov 2008, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00044994, 00045075) (CAS), 2♂ (00045386, 00045645) (USNM); 16 Nov 2008–23 Nov 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045056) (CAS); 23 Nov 2008–30 Nov 2008, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045692) (UCR). Analamanitra Forest, 14 km NE of Misinjo, 16.13333°S 45.7°E, 20 m, 23 Oct 2007–30 Oct 2007, M. Irwin, R. Harin'Hala, 1♂ (00045008) (CAS); 30 Oct 2007–16 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007148) (AMNH); 16 Nov 2007–20 Nov 2007, M. Irwin, R.

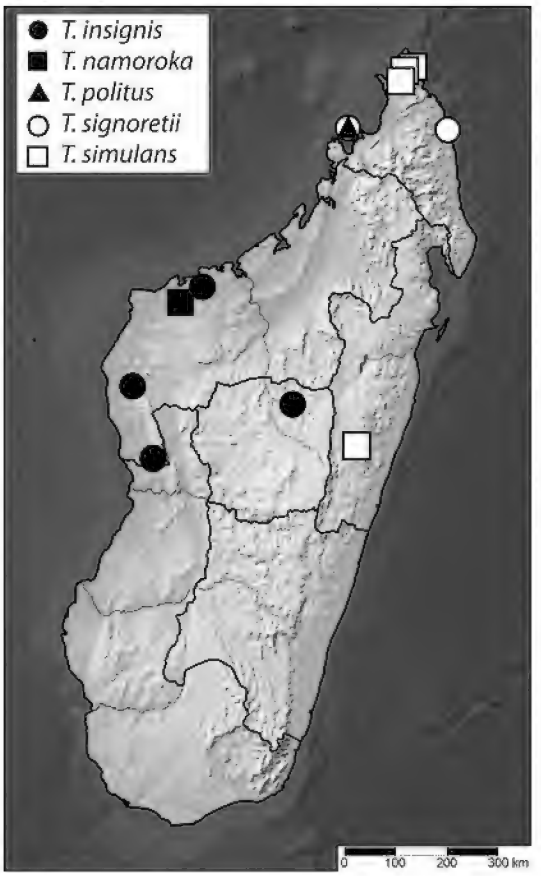
Harin'Hala, 3♂ (00007096, 00007176, 00045025) (MNHN); 20 Nov 2007–04 Dec 2007, M. Irwin, R. Harin'Hala, 2♂ (00044799, 00044896) (USNM). Anjiaabo, 3 km N Baly village, 16.059°S 45.27416°E, 7 m, 07 Nov 2007–24 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007214) (CAS). Besalampy District, Analangidro dry forest, 7 km NE of Besalampy, 16.6915°S 44.5235°E, 61 m, 24 Sep 2007–02 Oct 2007, M. Irwin, R. Harin'Hala, 1♂ (00044806) (CAS); 18 Nov 2007–25 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00044886) (SU). Besalampy District, Marofototra dry forest, 17 km W of Besalampy, 16.72166°S 44.42366°E, 52 m, 19 Nov 2007–26 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00044880) (CAS); 26 Nov 2007–03 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00044885) (SU). Namoroka 53 km from Soalala 3 km N Vilanandro Village, 16.47333°S 45.39133°E, 122 m, 16 Nov 2007–23 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007171) (BMNH), 1♂ (00007212) (CAS). Namoroka village, Befatika Andranovory, 7 km NW Vilanandro village, 16.47333°S 45.39133°E, 122 m, 02 Nov 2007–09 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00045002) (CAS). Parc National de Namoroka, 16.9 km 317° NW Vilanandro, 16.40666°S 45.31°E, 100 m, 12 Nov 2002–16 Nov 2002, Fisher et al., 1♂ (00045095) (CAS), 1♂ (00045133) (SU); 12 Nov 2002–16 Nov 2002, Fisher et al., 1♀ (00045042) (CAS). Parc National de Namoroka, 17.8 km 329° WNW Vilanandro, 16.37666°S 45.32666°E, 100 m, 08 Nov 2002–12 Nov 2002, Fisher et al., 1♂ (00006435) (CAS). **Toliara:** Beroboka village, 45 km NE Morondava, 19.9775°S 44.66533°E, 128 m, 30 Sep 2008–08 Oct 2008, M. Irwin, R. Harin'Hala, 1♂ (00044841) (CAS); 08 Oct 2008–16 Oct 2008, M. Irwin, R. Harin'Hala, 1♂ (00045649) (AMNH); 09 Nov 2008–17 Nov 2008, M. Irwin, R. Harin'Hala, 2♂ (00044915, 00045565) (CAS); 11 Dec 2008–19 Dec 2008, M. Irwin, R. Harin'Hala, 1♂ (00045695) (UCR). Beroboka village, 45 km NE Morondava, 19.9775°S 44.82483°E, 131 m, 14 Oct 2007–18 Oct 2007, M. Irwin, R. Harin'Hala, 1♂ (00045110) (CAS); 18 Oct 2007–26 Oct 2007, M. Irwin, R. Harin'Hala, 2♂ (00044859, 00045096) (BMNH); 17 Nov 2008–25 Nov 2008, M. Irwin, R. Harin'Hala, 1♂ (00044814) (AMNH), 1♂ (00045041) (CAS); 05 Feb 2009–13 Feb 2009, M. Irwin, R. Harin'Hala, 1♂ (00045208) (CAS). Cap Ste Marie Special Reserve, 74 km S of Tsihombe, 25.58766°S 45.163°E, 37 m, 23 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045379) (CAS). Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 16 Dec 2002–26 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045333) (CAS); 21 Apr 2003–28 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00045635) (UCR).

***Toxopus insignis*, new species**

Plates 4, 7, 10, 14; map 13

Diagnosis: Males are recognized among other species in *Toxopus* by the sparse vestiture, coloration, elongate cylindrical head in lateral view, sublateral antennal insertion, straight pedicel, and labial segment III ventrally straight. This species is similar to *T. italaviana*, *T. griswoldi*, *T. fisheri*, *T. antsiranana*, and *T. toliara*, from which it differs by the straight pedicel. The ventrally flat head surface further differentiates *T. insignis* males from the mentioned species, except for *T. fisheri*, which can be discerned from by the pale yellow postclypeal depression, dark brown maxillary plates and antennifers, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI.

Description: **MALE:** Body length: 10.43 mm (holotype), 9.73–11.41 mm. COLORATION: Blackish with pale yellow postclypeal medial longitudinal depression, interocular sulcus, scape basally, posterior margin of mesosternum, corium basally, mid and hind coxae anteriorly, trochanters, forefemur ventrally and subapically, mid and hind femora basally and subapically, fore- and mid tibiae medially, small subbasal and subapical band on hind tibia, anterior half of laterotergites, and sternites laterally and medially except intersternal suture. Antennal segments VI and VII, labium, and rest of hind tibia brown. VESTITURE: Very sparse; other features as in generic description. STRUCTURE: Head: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally flat; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli small, located on shallow median tubercle (pl. 13J), separated by less than diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about one-third longer than scape, not distinctly curved;



MAP 13. Localities of *Toxopus insignis*, *T. namoroka*, *T. politus*, *T. signoretii*, and *T. simulans*.

labium stout; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior ventral processes (pl. 22G), posteriorly obscured by endosoma; area of endosomal struts–DPS fusion short, subquadrate; endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21J, K).

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the pale interocular sulcus.

DISTRIBUTION: Mahajanga and northern Antananarivo provinces (map 13).

DISCUSSION: The pale yellow subapical band on the femora is sometimes absent.

HOLOTYPE: Male: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 14 Nov 2004–29 Nov 2004, M. Irwin, R. Harin'Hala (00045091) (CAS).

PARATYPES: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 31 Oct 2003–07 Nov 2003, M. Irwin, R. Harin'Hala, 1♂ (00045115) (CAS); 07 Nov 2003–15 Nov 2003, M. Irwin, R. Harin'Hala, 1♂ (00045662) (UCR); 15 Oct 2004–01 Nov 2004, M. Irwin, R. Harin'Hala, 2♂ (00007098, 00045080) (CAS), 2♂ (00045147, 00045265) (SU), 3♂ (00045426, 00045594, 00045670) (AMNH); 01 Nov 2004–14 Nov 2004, M. Irwin, R. Harin'Hala, 1♂ (00045051) (UCR), 5♂ (00045057, 00045125, 00045130, 00045140, 00045671) (CAS), 1♂ (00045702) (SU); 14 Nov 2004–29 Nov 2004, M. Irwin, R. Harin'Hala, 3♂ (00044920, 00045009, 00045065) (AMNH), 6♂ (00044920, 00045009, 00045065, 00045073, 00045081, 00045082) (BMNH), 14♂ (00045090, 00045098, 00045108, 00045113, 00045116, 00045121, 00045122, 00045135, 00045138, 00045149, 00045160, 00045162, 00045168, 00045169, 00045664, 00045665, 00045668) (CAS), 2♂ (00045679, 00045690) (SU), 2♂ (00045696, 00045697) (UCR); 29 Nov 2004–07 Dec 2004, M. Irwin, R. Harin'Hala, 2♂ (00044856, 00045030) (UCR), 3♂ (00045031, 00045040, 00045043) (USNM), 13♂ (00045046, 00045055, 00045058, 00045060, 00045066, 00045084, 00045103, 00045126, 00045146, 00045150, 00045151, 00045158, 00045164) (CAS), 6♂ (00045165, 00045659, 00045661, 00045666, 00045673, 00045703) (MNHN), 2♂ (00045724, 00045725) (SU); 22 Dec 2004–06 Jan 2005, M. Irwin, R. Harin'Hala, 3♂ (00007068, 00045145, 00045587) (USNM). **Mahajanga:** Analamanitra Forest, 14 km NE of Misinjo, 16.13333°S 45.7°E, 20 m, 16 Nov 2007–20 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00007229) (CAS). Parc National Tsingy de Bemaraha, 3.4 km 93°**E** Bekopaka, Tombeau Vazimba, 19.14194°S 44.82805°E, 50 m, 06 Nov 2001–10 Nov 2001, Fisher et al., 1♂ (00045054) (CAS). Réserve forestière Beanka, 50.7 km

E Maintirano, 17.88027°S 44.46888°E, 140 m, 28 Oct 2009–31 Oct 2009, B.L. Fisher et al., 1♂ (00006910) (CAS); 1♂ (00007081) (UCR).

***Toxopus italaviana*, new species**
Plates 4, 7, 10, 13B, 15B; map 12

Diagnosis: Males are recognized among other *Toxopus* species by the moderately dense vestiture, elongate cylindrical head shape in lateral view, broad postclypeal longitudinal depression, relatively large ocelli, antenna inserted sublaterally on the head, and labial segment III ventrally convex. This species is similar to *T. griswoldi*, *T. insignis*, *T. fisheri*, *T. antsiranana*, and *T. toliara*, but is distinguished by the diagnostic characters mentioned. The slightly larger ocelli further distinguish *T. italaviana* from the other species, except *T. toliara*. The intersegmental sutures carinulate between sternites II and III and laterally between III–VII also distinguish males of *T. italaviana* from these species, with the exception of *T. griswoldi*.

Description: **MALE:** Body length: 10.58 mm (holotype), 10.25–10.63 mm. COLORATION: Blackish with pale yellow mandibular and maxillary plates dorsally, postclypeus except laterally above eye, antennifer, scape basally, antennal segment VII basally, labial segment II ventroapically, labial segment III ventrobasally, anterolateral projections of pronotum, mesosternum anteromedially and posterolaterally, metasternum medially, corium basally, coxae, trochanters, forefemur basally and ventrally, mid femur basally and subapically, hind femur basally and apically, foretibia except basally, mid tibia except apically, hind tibia except medially and apically, laterotergite II, anterior half of dorsal laterotergites III–VII, ventral laterotergites III–VII, and abdominal sternites medially and laterally. Antennal segment VI and apex of VII, remainder of labium, and corium brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: Head (pl. 13B): Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region longer than postocular (pl. 13K); synthlipsis about two times width of eye; interocular sulcus near hind margin of eye; postclypeus with shallow, broad medial longitudinal depression to middle of interocular area; postocular moderately broad in dorsal view; ocelli large, located on shallow median tubercle (pl. 13J), separated by a distance less than or equal to diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about two-fifths longer than scape, slightly curved; labium stout; labial segment III ventrally convex (pl. 13J). Thorax (pl. 15B): Anterior pronotal lobe with small anterolateral projections; posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges; lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III and laterally between III–VII; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior ventral processes (pl. 22G), posteriorly obscured by endosoma; area of endosomal struts–DPS fusion short, subquadrate; endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21J, K).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Italaviana, Madagascar.

Distribution: Italaviana, near the Antananarivo-Fianarantsoa border (map 12).

Holotype: Male: **Madagascar: Fianarantsoa:** Italaviana, 35 km SSE of Antsirabe, 20.17333°S 47.086°E, 1360 m, 27 Feb 2005–13 Mar 2005, M. Irwin, R. Harin'Hala (00006433) (CAS).

Paratypes: **Madagascar: Fianarantsoa:** Italaviana, 35 km SSE of Antsirabe, 20.17333°S 47.086°E, 1360 m, 09 Dec 2002–19 Dec 2002, M. Irwin, R. Harin'Hala, 1♂ (00006965) (CAS); 10 Mar 2003–20 Mar 2003, M.

Irwin, R. Harin'Hala, 1♂ (00006431) (CAS), 1♂ (00006966) (UCR); 15 Jul 2003–26 Jul 2003, M. Irwin, R. Harin'Hala, 4♂ (00006438, 00006439, 00006441, 00006445) (CAS), 2♂ (00006449, 00006450) (USNM); 16 Oct 2003–26 Oct 2003, M. Irwin, R. Harin'Hala, 2♂ (00006961, 00006963) (SU); 22 Jan 2004–04 Feb 2004, M. Irwin, R. Harin'Hala, 1♂ (00006962) (CAS); 24 Mar 2004–08 Apr 2004, M. Irwin, R. Harin'Hala, 1♂ (00006428) (CAS), 2♂ (00006429, 00006430) (BMNH); 27 Feb 2005–13 Mar 2005, M. Irwin, R. Harin'Hala, 1♂ (00006432) (UCR).

Toxopus melobrunneus, new species

Plates 4, 7, 10; map 11

DIAGNOSIS: Males are recognized among other species in *Toxopus* by a combination of the following characters: the large body size, coloration, cylindrical head shape in lateral view, smooth posterior pronotal lobe and lateral depressions, continuous pronotal transverse furrow, and intersegmental sutures carinulate between sternites II and III. Males are similar to males of *T. italaviana*, *T. griswoldi*, *T. insignis*, *T. fisheri*, *T. ambohitantely*, *T. antsiranana*, and *T. toliara*, but the continuous pronotal transverse suture and intersegmental sutures carinulate between sternites II and III distinguish *T. melobrunneus* from these species. The subtriangular pygophore process and medial endosomal sclerotization pattern further differentiate *T. melobrunneus* from these species, except from *T. ambohitantely*.

DESCRIPTION: **MALE:** Body length: 14.95 mm (holotype), 13.96–14.95 mm. COLORATION: Blackish with pale yellow area anterior to interocular sulcus, lateral and posterolateral margins of ocellar tubercle, anterolaterally from interocular sulcus, antennal segments V (except basally) and VI and VII, margins and longitudinal depression of metasternum, corium basally, femora basally, foretibia ventrally, anterior area of laterotergites III–VII, abdominal sternites II medially, anterolateral spots on sternites II–VII, and ventrolateral spots on sternites III–VII. VESTITURE: Dense; other features as in generic description. STRUCTURE: HEAD: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on distinct median tubercle (pl. 13H), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium slender; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow continuous; lateral depressions of posterior pronotal lobe smooth; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts-DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the mostly dark brown legs.

DISTRIBUTION: Northern Fianarantsoa and southeastern Toliara provinces (map 11).

DISCUSSION: Some specimens have more pale yellow on the ventral femoral and tibial surfaces and laterotergites, and can be reduced on the abdomen.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 30 Dec 2005–08 Jan 2006, M. Irwin, R. Harin'Hala (00007059) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Belle Vue at Talatakely, 21.2665°S 47.42016°E, 1020 m, 04 May 2003–16 May 2003, M.

Irwin, R. Harin'Hala, 1♂ (00007037) (CAS), 1♂ (00007129) (UCR). Parc National Ranomafana, radio tower at forest edge, 21.251°S 47.40716°E, 1130 m, 07 May 2002–14 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00044926) (CAS), 1♂ (00044926) (USNM); 25 Jul 2002–03 Aug 2002, M. Irwin, R. Harin'Hala, 1♂ (00045238) (SU); 06 Jul 2003–17 Jul 2003, M. Irwin, R. Harin'Hala, 1♂ (00045291) (CAS); 12 Feb 2004–23 Feb 2004, M. Irwin, R. Harin'Hala, 1♂ (00007009) (CAS); 24 Jun 2004–08 Jul 2004, M. Irwin, R. Harin'Hala, 1♂ (00045275) (USNM); 12 Jul 2005–25 Jul 2005, M. Irwin, R. Harin'Hala, 1♂ (00044927) (USNM); 06 Nov 2005–13 Nov 2005, M. Irwin, R. Harin'Hala, 1♂ (00007127) (CAS); 07 Sep 2006–20 Sep 2006, M. Irwin, R. Harin'Hala, 2♂ (00007028, 00007196) (SU); 11 Nov 2006–18 Nov 2006, M. Irwin, R. Harin'Hala, 2♂ (00044935, 00044941) (UCR). **Toliara:** Forêt Ivohibe 55.0 km N Tolagnaro, 24.56888°S 47.20388°E, 200 m, 02 Dec 2006–04 Dec 2006, B.L. Fisher et al., 1♂ (00006728) (CAS). **Unknown:** 3♂ (00044925, 00044932, 00045243) (CAS).

Toxopus miandritsara, new species

Plates 4, 7, 11; map 10

Diagnosis: Males are recognized among other species in this genus by a combination of the following characters: the coloration, ovoid head shape in lateral view, anteocular region longer than postocular, broad postocular, antenna inserted slightly sublaterally on the head, and smooth posterior pronotal lobe and lateral depressions. This species is similar to *T. simulans* and *T. toamasina*, but differs from these species by the light brown proximal part of the veins on the hemelytra, dark brown ventral abdominal surface, larger synthlipsis width, broad postocular, slight sublateral antennal insertion on the head, and smooth posterior pronotal lobe and lateral depressions. *Toxopus miandritsara* is further differentiated from *T. toamasina* by the intersegmental sutures carinulate between sternites II and III.

Description: **MALE:** Body length: 10.06 mm (holotype), 9.51–10.06 mm. COLORATION: Blackish with pale yellow corium basally, proximal wing veins, mid and hind coxae basally, mid and hind trochanters, femora basally and ventrally, foretibia subbasally and apically, mid and hind tibiae medially and apically, anterior one-third of laterotergites, and lateral margin of abdominal sternites II–VI. Mandibular and maxillary plates, labium, remainder of corium, and tarsi brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; ventrally with shallow medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli large, located on shallow median tubercle (pl. 13J), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted slightly sublaterally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally convex (pl. 13J). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions on pronotum smooth; hemelytron reaching or surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion hexagonal; endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in apposition and is named after the type locality, Miandritsara Forest, Madagascar.

Distribution: Miandritsara Forest in the Fianarantsoa province (map 10).

Discussion: The transverse suture between the meso- and metasterna and the ventrolateral spots on the anterior abdominal sternites are pale yellow in some specimens.

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Miandritsara Forest, 40 km S Ambositra, 20.79266°S 47.17566°E, 825 m, 26 Mar 2007–05 Apr 2007, M. Irwin, R. Harin'Hala (00044852) (CAS).

PARATYPES: **Madagascar: Fianarantsoa:** Miandritsara Forest, 40 km S Ambositra, 20.79266°S 47.17566°E, 825 m, 13 Nov 2006–22 Nov 2006, M. Irwin, R. Harin'Hala, 1♂ (00044848) (CAS); 22 Nov 2006–01 Dec 2006, M. Irwin, R. Harin'Hala, 1♂ (00044826) (CAS); 10 Dec 2006–19 Dec 2006, M. Irwin, R. Harin'Hala, 1♂ (00006148) (UCR); 28 Dec 2006–04 Jan 2007, M. Irwin, R. Harin'Hala, 2♂ (00044834, 00044970) (CAS), 1♂ (00044973) (SU); 31 Jan 2007–11 Feb 2007, M. Irwin, R. Harin'Hala, 1♂ (00006481) (UCR).

Toxopus namoroka, new species

Plates 4, 7, 11; map 13

DIAGNOSIS: Males are recognized among other *Toxopus* species by a combination of the following characters: the distinctive dark and pale coloration with red-brownish head and thoracic markings, sparse vestiture, narrow postclypeal depression, smooth posterior pronotal lobe, and intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII. Males are similar to males of *T. steineri*, *T. basalis*, *T. vazimba*, and *T. brucei*, but differs from these species by the very distinctive red-brown head and thorax, narrow postclypeal depression, eye about one-fourth of the head length, and intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII.

DESCRIPTION: **MALE:** Body length: 11.44 mm (holotype), 11.44–11.56 mm. COLORATION: Blackish with reddish-brown head, labium, scape, pedicel, antennal segment V, anterior pronotal lobe except pronotal longitudinal furrow, dorsal half of anterior propleural lobe, anterior margin of mesopleuron, scutellum, and legs (except coxae posteriorly and femora basally). Antennal segments VI and VII, corium basally, anterior half of laterotergites, abdominal sternites III–VI medially except at margins, and anterolateral spots on sternites pale yellow. VESTITURE: Sparse; other features as in generic description. STRUCTURE: HEAD: Subquadrate in lateral view (pl. 13K); longer than wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about one-fourth of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-third longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe smooth; wings spread out in specimens. ABDOMEN: Apex rounded or sinuate; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the type locality, Tsingy de Namoroka National Park, Madagascar.

DISTRIBUTION: Tsingy de Namoroka National Park in the Mahajanga province (map 13).

DISCUSSION: The medial pale yellow spots on the abdominal sternites may be divided by a brown medial longitudinal stripe, and the pale yellow spot on sternite VI may be reduced.

HOLOTYPE: Male: **Madagascar: Mahajanga:** Parc National de Namoroka, 16.9 km 317° NW Vilanandro, 16.40666°S 45.31°E, 100 m, 12 Nov 2002–16 Nov 2002, Fisher et al. (00045251) (CAS).

PARATYPE: **Madagascar: Mahajanga:** Parc National de Namoroka, 16.9 km 317° NW Vilanandro, 16.40666°S 45.31°E, 100 m, 12 Nov 2002–16 Nov 2002, Fisher et al., 1♂ (00006477) (CAS).

Toxopus pallidus, new species

Plates 4, 7, 11; map 12

DIAGNOSIS: Males are recognized among other species in *Toxopus* by the smaller body size, coloration, ovoid head shape in lateral view, anteocular regions as long as postocular, labial segment III ventrally straight, and BPE as long as the basal plate. This species is similar to *T. farafangana*, from which it differs by the the pale yellow posterior propleural lobe and thoracic sterna, predominately pale to pale yellow ventral abdominal surface, interocular sulcus posterior to the hind margin of the eye, labial segment III ventrally straight, striated posterior pronotal lobe, and BPE as long as the basal plate. This species is also similar to *T. simulans*, but is distinguished by the slightly smaller body size, ventral head depression restricted to the anteocular region, anteocular as long as postocular, broader postocular, labial segment III ventrally straight, and intersegmental sutures carinulate between sternites II and III.

DESCRIPTION: **MALE:** Body length: 9.10 mm (holotype), 8.85–9.10 mm. COLORATION: Blackish with pale yellow scape basally, antennal segment V (except basally) and VI and VII; posterior propleural lobe, ventral half of mesopleuron, metapleuron, thoracic sterna, corium basally, coxae, trochanters, fore- and mid femora ventrally and basally, hind femur basally, foretibia ventrally, mid and hind tibiae except subbasally and apically, anterior margin of dorsal laterotergites, ventral laterotergites, abdominal sternites except lateral medial spots, and margins of pygophore. Labium and posterior pronotal lobe brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: HEAD: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region as long as postocular (pl. 13J); postclypeus with deep, narrow medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus posterior to hind margin of eye (pl. 13B); postocular broad in dorsal view (pl. 13B); ocelli large, located on shallow median tubercle (pl. 13J), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), ventrally obscured by endosoma; area of endosomal struts–DPS fusion ovate; endosoma missing.

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the pale body coloration.

DISTRIBUTION: Ranomafana National Park in the Fianarantsoa province (map 12).

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** Parc National de Ranomafana, Vatoharanana River, 4.1 km 231° SW Ranomafana, 21.29°S 47.43333°E, 1100 m, 27 Mar 2003–31 Mar 2003, Fisher et al. (00045432) (CAS).

PARATYPE: **Madagascar: Fianarantsoa:** Parc National Ranomafana, Vohiparara, at broken bridge, 21.22616°S 47.36983°E, 1110 m, 08 Apr 2002–15 Apr 2002, M. Irwin, R. Harin'Hala, 1♂ (00007192) (CAS).

Toxopus parkeri, new species

Plates 4, 7, 11, 13K; map 11

DIAGNOSIS: Males are recognized among other species in *Toxopus* by a combination of the following characters: the coloration, dense vestiture, subquadrate head in lateral view that is as

long as wide in dorsal view, and ventrally depressed head surface, synthlipsis two times width of an eye, interocular sulcus anterior to the hind margin of the eye, intersegmental sutures carinulate between sternites II–VI; and BPE as long as basal plate. Males are very similar to *T. basalis*, *T. tibialis*, and *T. brucei*, but differ by the smaller body size, larger synthlipsis width, and interocular sulcus located anterior to the hind margin of the eye. The smaller eye size relative to the head length, the eyes not reaching the dorsal and ventral margins, larger synthlipsis width, and intersegmental sutures carinulate between sternites II–VI separate *T. parkeri* from *T. basalis*. The striated lateral depressions on the posterior pronotal lobe and intersegmental sutures carinulate between sternites II–VI differentiate *T. parkeri* from *T. brucei*.

Description: **MALE:** Body length: 12.22 mm (holotype), 11.52–13.34 mm. COLORATION: Blackish with pale yellow clypeus, postclypeal medial longitudinal depression, bases of scape and pedicel, antennal segment V (except basally) and VI and VII, meso- and metasterna, corium basally, forecoxa posteriorly, mid and hind coxae except laterally, trochanters, forefemur except dorsally, mid and hind femora basally, foretibia except basally, mid and hind tibiae medially, tarsi, anterior half of laterotergites, and abdominal sternites (except pygophore) medially and laterally. Scape and pedicel medially, antennal segment IV and base of V, and postclypeal medial longitudinal depression brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head (pl. 13K): Subquadrate in lateral view; as long as wide in dorsal view; ventrally with shallow medial depression; anteocular region longer than postocular; postclypeus with shallow, broad medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus anterior to hind margin of eye; postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle, separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight. Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded or sinuate; intersegmental sutures carinulate between sternites II–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in the genitive case and is named after Frank Parker, who is one of the main CAS collectors for the taxonomic inventory of Madagascar.

Distribution: Antananarivo, Mahajanga, and Toliara provinces (map 11).

Discussion: The antennae and postclypeus vary with respect to the extent of the dark brown coloration.

Holotype: Male: **Madagascar: Toliara:** Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 16 Dec 2002–26 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala (00044875) (CAS).

Paratypes: **Madagascar: Antananarivo:** 46 km NE of Ankazobe: Ambohitantely, 18.198°S 47.2815°E, 700 m, 20 Jan 2004–01 Feb 2004, M. Irwin, R. Harin'Hala, 1♂ (00006973) (UCR), 1♂ (00006974) (CAS). **Mahajanga:** Maintirano District Asondrodava dry forest, 15 km N of Maintirano, 17.96533°S 44.0355°E, 61 m, 03 Dec 2007–10 Dec 2007, M. Irwin, R. Harin'Hala, 1♂ (00007075) (CAS). **Toliara:** Parc National d'Andohahela, Ihazofotsy Parcelle III, 24.83083°S 46.53616°E, 80 m, 16 Dec 2002–26 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00044884) (CAS); 24 Feb 2003–06 Mar 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00007091, 00044897) (SU), 2♂ (00045204, 00045249) (CAS), 1♂ (00045381) (UCR); 21 Apr 2003–28 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00045052, 00045377) (USNM). **Unknown:** 1♂ (00006976) (CAS).

Toxopus politus Bergroth, 1905
Map 13

Toxopus politus Bergroth, 1905, 49: 375.

Distribution: According to the original description, the type specimen was collected from Nosy Be Island off the northwest coast of Madagascar (map 13).

Discussion: We do not redescribe this species, since the only known specimen could not be located, and none of the specimens examined by us correspond to this species. Many of Bergroth's type specimens are deposited in the Zoological Museum, University of Helsinki, but Jansson and Coscarón (1989: appendix I) reported the female holotype of *T. politus* to be missing (or away on loan) from that collection. The specimen is still absent (Larry Huldén, personal commun.). Correspondence with other major European collections did not offer any further leads, and we speculate that the type specimen may be lost. The three female specimens of *Toxopus* examined during our study do not appear to be conspecific with *T. politus* based on differences in color patterns, ventral abdominal structure (segment VI medially longer than V in *T. politus*; subequal in female specimens), and locality information. A potential neotype designation will therefore have to await availability of additional *Toxopus* specimens.

Toxopus signoretii (Reuter), 1887, new combination
Plate 12; map 13

Cleptria signoretii Reuter, 1887, 8: 107.

Revised diagnosis: Males are recognized among other *Toxopus* species by a combination of the following characters: the coloration, large body size, subquadrate head shape in lateral view that is as long as it is wide in dorsal view, eye reaching dorsal head surface, and synthlipsis about the width of an eye. This species is very similar to *T. tibialis*, *T. basalis*, and *T. parkeri*, but differs by the slightly larger body size, smaller synthlipsis width, and intersegmental sutures carinulate between sternites entirely between II–III and laterally between III–VI. *Toxopus signoretii* can be further differentiated from *T. parkeri* by the sparse vestiture, interocular sulcus near the hind margin of the eye, and eye about half width of the head lengths and not reaching the dorsal head surface. The interocular sulcus near the hind margin of the eye and the eye not reaching the dorsal but reaching the ventral head surface further distinguish *T. signoretii* from *T. basalis*. This species differs from *T. tibialis* by the sparse vestiture, ventral medial longitudinal depression on the head extending onto postocular surface, and eye about half width of the head lengths and not reaching the dorsal head surface.

Redescription: **MALE:** Body length: 12.20 mm (holotype). COLORATION: Brownish with pale yellow postclypeal medial longitudinal depression, base of scape, corium basally, trochanters, forefemur basally and ventrally, mid and hind femora except dorsomedially, foretibia except basally, mid and hind tibiae medially, mid tarsi (fore- and hind missing), anterior half of dorsal laterotergites, and abdominal sternites (except pygophore) paramedially and laterally. VESTITURE: Sparse; other features as in generic description. STRUCTURE: Head: Subquadrate in lateral view (pl. 13K); about as long as wide in dorsal view; ventrally with longitudinal depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); ocelli large, located on distinct median tubercle (pl. 13H), separated by less than diameter of ocellus; postocular narrow in dorsal view (pl. 13A); eye about half of head length, reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about as long as scape, curved; labium stout; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); posterior pronotal lobe smooth; lateral depressions of posterior pronotal

lobe smooth; hemelytron nearly reaching abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites entirely between II–III and laterally between III–VI.

Distribution: The holotype and one juvenile were collected from Nosy Be Island off the northwest coast of Madagascar (map 13). One specimen was collected from Vohemar, which is on the northeast coast of Madagascar.

Discussion: The redescription is based on habitus images and Reuter's (1887) original description of the holotype. The original description indicates that one immature specimen was collected (coll. Stumpff) in "Loucoubé," which is currently known as the Natural Reserve of Lokobe on Nosy Be Island. Reuter described this species in the genus *Cleptria* Stål, 1859, but did not provide arguments for assigning it to that genus. This species is transferred to *Toxopus* based on the 7-segmented antenna, head being longer than or as long as the width, subequal lengths of labial segments II and III, and apterous females, which are features differentiating *Toxopus* from *Cleptria*.

Holotype: Male: **Madagascar: Antsiranana:** Nosy Be, 13.31502°S 48.25926°E, 155 m (NMW).

Paratype: **Madagascar: Antsiranana:** Nosy Be, 13.31502°S 48.25926°E, 155 m, 1 juv. (MNHN).

Other Material Examined: **Madagascar: Antsiranana:** Vohémar, 13.37028°S 50.00337°E, 6 m, 1♂ (MNHN). **Unknown:** 1♂ (NMW).

Toxopus simulans, new species

Plates 4, 7, 11; map 13

Diagnosis: Males recognized among other *Toxopus* species by the coloration, ovoid head shape in lateral view that is longer than wide in dorsal view, anteocular region longer than postocular, narrow postocular, and labial segment III ventrally convex. This species is most similar to *T. pallidus*, but the slightly larger body size, ventral medial depression extending along the entire head surface, longer anteocular region relative to the postocular, interocular sulcus located near the hind margin of the eye, narrower postocular in dorsal view, and ventrally convex labial segment III distinguishes this species from *T. pallidus*.

Description: **MALE:** Body length: 11.53 mm (holotype), 10.89–11.62 mm. COLORATION: Blackish with pale yellow antennal segments V (except basally) and VI and VII, meso- and metasterna, coxae, trochanters, forefemur ventrally, mid and hind femora except large subapical band, mid and hind tibiae medially, tarsi, anterior one-third of dorsal laterotergites, ventral laterotergites, and abdominal sternites (except pygophore) medially and laterally. Mandibular and maxillary plates, postclypeal medial longitudinal depression, labium, posterior pronotal lobe, corium, and lateral longitudinal band across sternites varying shades of brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); longer than wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, narrow medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on distinct median tubercle (pl. 13H), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally convex (pl. 13J). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS

(pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion short, subquadrate; endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a participle in the nominative case and is named for the similar body coloration with *Toxopus pallidus*.

Distribution: Toamasina and northern Antsiranana provinces (map 13).

Holotype: Male: **Madagascar: Antsiranana:** Parc National Montagne d'Ambre, 12.51444°S 49.18138°E, 960 m, 04 Mar 2001–19 Mar 2001, M. Irwin, R. Harin'Hala (00045508) (CAS).

Paratypes: **Madagascar: Antsiranana:** Parc National Montagne d'Ambre, 12.52027°S 49.17916°E, 1125 m, 14 May 2001–30 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00007226) (CAS). Sakalava Beach, dwarf littoral forest, 12.26277°S 49.3975°E, 10 m, 20 Aug 2001–28 Aug 2001, M. Irwin, R. Harin'Hala, 1♂ (00045363) (CAS). 7 km N of Joffreville, 12.33333°S 49.25°E, 360 m, 13 May 2001–16 May 2001, M. Irwin, R. Harin'Hala, 1♂ (00045123) (SU). **Toamasina:** Botanic Garden near entrance to Andasibe National Park, 18.92633°S 48.40783°E, 1025 m, 01 Nov 2001–07 Nov 2001, M. Irwin, R. Harin'Hala, 1♂ (00007048) (UCR). **Unknown:** 1♂ (00045124) (CAS).

Toxopus steineri, new species

Plates 4, 7, 11; map 12

Diagnosis: Males recognized among other species in *Toxopus* by the coloration, dense vestiture, narrow postclypeal depression, ventrally straight labial segment III, smooth posterior pronotal lobe, and intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI. This species is similar to *T. namoroka*, *T. basalis*, *T. vazimba*, and *T. brucei*, but the dark brown to blackish ventral abdominal surface, narrow postclypeal depression, and ventrally straight labial segment III distinguishes *T. steineri* from these other species.

Description: **MALE:** Body length: 11.14 mm (holotype), 11.00–11.59 mm. COLORATION: Blackish with pale yellow bases of scape and pedicel, antennal segment V distally and segments VI and VII, posterolateral margins of pronotum, lateral areas of transverse sulcus between meso- and metasterna, coxae, trochanters, base forefemur, forefemur subapically and ventrally, mid and hind femora basally and apically, foretibia medially, mid tibia except subbasally and apically, hind tibia basally, foretarsi, mid and hind tarsi basally, corium basally, anterior one-third to half of laterotergites, and abdominal sternites laterally except posterior two-thirds of segments VI and VII. Maxillary plates dorsally, postclypeal longitudinal depression, paramedially along interocular sulcus, basal half of antennal segment V, labium, mid and hind tarsi apically, and anterior margin of corium (except basally) dark yellow to brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: Head: Subquadrate in lateral view (pl. 13K); longer than wide in dorsal view; ventrally with deep longitudinal depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, narrow medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about two-fifths longer than scape, slightly curved; labium stout; labial segment III ventrally convex (pl. 13J). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), ventrally obscured by semiextended endosoma; area of endosomal struts–

DPS fusion subquadrate; endosoma sclerotized medially (pl. 21L).

ETYMOLOGY: The species epithet is a noun in the genitive case and is named after Ranomafana, Madagascar, which is near the type locality.

DISTRIBUTION: Known from a single locality west of Ranomafana in the Fianarantsoa province (map 12).

HOLOTYPE: Male: **Madagascar: Fianarantsoa:** 7 km W Ranomafana, 21.25923°S 47.38664°E, 900 m, 23 Feb 1990–28 Feb 1990, W.E. Steiner (00026334) (USNM).

PARATYPES: **Madagascar: Fianarantsoa:** 7 km W Ranomafana, 21.25923°S 47.38664°E, 900 m, 23 Feb 1990–28 Feb 1990, W.E. Steiner, 3♂ (00026332, 00026333, 00026335) (USNM).

Toxopus tibialis, new species

Plates 4, 7, 11; map 11

DIAGNOSIS: Males are recognized among other species in *Toxopus* by a combination of the following characters: the relatively larger body size, moderately dense vestiture, head as long as it is wide in dorsal view, ventral depression on the head restricted to the anteocular region, eye about one-third of head length, eye not reaching dorsal or ventral head margins, and intersegmental sutures carinulate between sternites II–VI. Males are most similar to *T. basalis* and *T. parkeri*, from which it differs by the larger body size, ventral anteromedial depression on the head, and interocular sulcus located near the hind margin of the eye. The denser vestiture, smaller eye size that does not reach the dorsal and ventral head margins, and intersegmental sutures carinulate between sternites II–VI further differentiates *T. tibialis* from *T. basalis*. A smaller synthlipsis width further distinguished *T. tibialis* from *T. parkeri*.

DESCRIPTION: **MALE:** Body length: 14.52 mm (holotype), 13.89–15.40 mm. COLORATION: Blackish with pale yellow clypeus, dorsal margins of mandibular and maxillary plates, postclypeal medial longitudinal depression, antennifer, scape basally, antennal segments V–VII, mesosternum except medial longitudinal depression, metasternum medially, corium basally, mid and hind coxae, trochanters, base of forefemur, for femur ventrally and subbasally, mid and hind femora except small apical and large medial bands, tibiae medially, tarsi, anterior half of laterotergites, and abdominal sternites (except pygophore) medially, and lateral margin of sternites. Labium brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: HEAD: Subquadrate in lateral view (pl. 13K); as long as wide in dorsal view; ventrally with deep anteromedial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about 1.5 times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on distinct median tubercle (pl. 13H), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe weakly transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II–VI; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

ETYMOLOGY: The species epithet is an adjective in the nominative case and is named for the pale coloration of the tibia.

DISTRIBUTION: Antsiranana and Mahajanga provinces in Madagascar (map 11).

Discussion: The clypeus, mandibular and maxillary plates, and postclypeus are slightly darker in some specimens.

Holotype: Male: **Madagascar: Antsiranana:** Forêt Ambanitaza, 26.1 km 347° Antalaha, 14.67944°S 50.18361°E, 240 m, 26 Nov 2004, B.L. Fisher (00045457) (CAS).

Paratypes: **Madagascar: Antsiranana:** 7 km N of Joffreville, 12.33333°S 49.25°E, 360 m, 22 Jan 2001–26 Jan 2001, M.E. Irwin, E.L. Schlinger, R. Harin'Hala, 1♂ (00044821) (CAS). Forêt d'Ampondrabe, 26.3 km 10° NNE Daraina, 12.97°S 49.7°E, 175 m, 10 Dec 2003, B.L. Fisher, 1♂ (00045701) (CAS). Marojejy National Park, 5 km W Manantenina village, Camp Mantella, 14.43816°S 49.774°E, 490 m, 11 Feb 2005–18 Feb 2005, M. Irwin, R. Harin'Hala, 1♂ (00045492) (SU). **Mahajanga:** Réserve forestière Beanka, 50.2 km E Maintirano, 18.02638°S 44.05055°E, 250 m, 19 Oct 2009–26 Oct 2009, B.L. Fisher et al., 1♂ (00044854) (UCR). **Unknown:** 1♂ (00045637) (CAS).

Toxopus toamasina, new species

Plates 4, 7, 11; map 10

Diagnosis: Males are recognized among other species in this genus by the coloration, ovoid head shape in lateral view that is as long as it is wide in dorsal view, synthlipsis about as wide as an eye, narrow postocular, eye about half the length of the head in lateral view and reaching the dorsal and ventral head margins, and intersegmental sutures carinulate between sternites II and III and laterally between III–V. This species is similar to *T. simulans*, but differs by the generally darker coloration, apex of corium light brown, head as long as it is wide, smaller synthlipsis width, eye one-half of the head length in lateral view, eye height relative to dorsal and ventral head margins, labial segment III ventrally straight, and intersegmental sutures carinulate between sternites II and III and laterally between III–V.

Description: **MALE:** Body length: 12.04 mm (holotype), 11.22–12.41 mm. COLORATION: Blackish with pale yellow margins of ocellar tubercle except posteromedial area, antennal segments V (except basally) and VI and VII, mid and hind coxae, trochanters, forefemur except dorsally, mid and hind femora except subapically, mid and hind tibiae except subbasally and apically, tarsi, anterior half of dorsal laterotergites, ventral laterotergites, paramedial spots on abdominal sternites II–VI, and lateral margin of abdomen. Labium, posterolateral pronotal lobe, and corium apically brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: Head: Ovoid in lateral view (pl. 13F); as long as wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular narrow in dorsal view (pl. 13A); ocelli large, located on distinct median tubercle (pl. 13H), separated by less than diameter of ocellus; eye about half of head length, reaching dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe transversely striated; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe transversely striated; hemelytron surpassing abdominal apex. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II and III and laterally between III–V; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore; BPE as long as basal plate; endosomal struts reaching posterior margin of DPS (pl. 21J, K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21K); endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in apposition and is named after the Toamasina province in Madagascar, where all known specimens were collected.

Distribution: Eastern region the Toamasina province (map 10).

DISCUSSION: In some specimens, the scutellar processes and abdominal sternite II are pale yellow, the pale yellow ventrolateral abdominal spots vary in size.

HOLOTYPE: Male: **Madagascar: Toamasina:** Parcelle E3, Tampolo, 17.28333°S 49.43333°E, 10 m, 14 Apr 2004, Malagasy Ant Team (00006478) (CAS).

PARATYPES: **Madagascar: Toamasina:** Mobot Site, Analalava 7 km SW of Foulpointe, 17.69333°S 49.46027°E, 18 m, 03 Jan 2008–11 Jan 2008, M. Irwin, R. Harin'Hala, 2♂ (00007095, 00044942) (CAS); 11 Jan 2008–18 Jan 2008, M. Irwin, R. Harin'Hala, 1♂ (00006394) (CAS); 22 Feb 2008–29 Feb 2008, M. Irwin, R. Harin'Hala, 1♂ (00045546) (SU); 04 Apr 2008–11 Apr 2008, M. Irwin, R. Harin'Hala, 1♂ (00007056) (SU); 18 Apr 2008–25 Apr 2008, M. Irwin, R. Harin'Hala, 1♂ (00007078) (UCR); 25 Apr 2008–02 May 2008, M. Irwin, R. Harin'Hala, 1♂ (00045537) (UCR). Parcelle E3, Tampolo, 17.28333°S 49.43333°E, 10 m, 14 Apr 2004, Malagasy Ant Team, 1♂ (00007218) (CAS).

Toxopus toliara, new species

Plates 4, 7, 11, 21K; map 10

DIAGNOSIS: Males are recognized among other *Toxopus* species by the coloration, moderately dense vestiture, elongate cylindrical head in lateral view, relatively large ocelli, antenna inserted sublaterally on the head, ventrally straight labial segment III, and smooth posterior pronotal lobe. This species is similar to *T. italaviana*, *T. griswoldi*, *T. insignis*, *T. fisheri*, and *T. antsiranana*, but is distinguished by the diagnostic features mentioned.

DESCRIPTION: **MALE:** Body length: 11.02 mm (holotype), 10.39–12.54 mm. COLORATION: Blackish with pale yellow maxillary plates dorsally; antennifers postclypeal medial longitudinal depression, paramedian longitudinal stripes on postclypeus anterior of interocular sulcus that extend laterally along interocular sulcus, labium, scape basally, antennal segment VII, collar, pronotum anterolaterally, anterolateral margin of posterior pronotal lobe, meso- and metasterna medially except transverse sulcus, corium basally, coxae, trochanters, fore- and mid femora basally and subapically, hind femur except medially, foretibia basally and medially except lateral spots, base of mid tibia, mid tibia subbasally and medially, hind tibia basally and subapically, tarsi, anterior half of laterotergites, and abdominal sternites laterally and medially, except intersternal sutures. Antennal segments V and VI and remainder of corium brown. VESTITURE: Moderately dense; other features as in generic description. STRUCTURE: HEAD: Cylindrical in lateral view (pl. 13J); longer than wide in dorsal view; ventrally with shallow anteromedial depression; anteocular region longer than postocular (pl. 13K); postclypeus with shallow, narrow medial longitudinal depression to middle of interocular area (pl. 13B); synthlipsis about two times width of eye; interocular sulcus near hind margin of eye (pl. 13B); postocular moderately broad in dorsal view; ocelli large, located on shallow median tubercle (pl. 13J), separated by less than diameter of ocellus; eye about one-third of head length, not reaching dorsal and ventral head surfaces; antenna inserted sublaterally on head; pedicel about two-fifths longer than scape, slightly curved; labium slender; labial segment III ventrally straight (pl. 13K). THORAX: Anterior pronotal lobe with small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly to strongly transversely striated; hemelytron reaching or surpassing abdominal apex. ABDOMEN: Apex rounded; intersegmental sutures carinulate between sternites II–IV and laterally between IV–VI; pygophore process curved in lateral view (pl. 20K), elongate in caudal view (pl. 19H), surpassing posterior margin of pygophore; BPE shorter than basal plate; endosomal struts reaching posterior margin of DPS (pl. 21K), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate subquadrate (pl. 21K); endosoma with sclerotized, hairlike, denticles on posterior margin (pl. 21K).

ETYMOLOGY: The species epithet is a noun in apposition and is named after the Toliara province in Madagascar, where a majority of the specimens examined were collected.

DISTRIBUTION: Fianarantsoa, Mahajanga, and Toliara provinces (map 10).

Discussion: The coloration is highly variable with the pale yellow markings more extensive or reduced on the head, pronotum, scutellar processes, and legs.

Holotype: Male: **Madagascar: Toliara:** Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 28 Feb 2004–24 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala (00006598) (CAS).

Paratypes: **Madagascar: Fianarantsoa:** 50 km S of Farafangana, Mahabo Mananivo, Ampitavananima Forest, 23.12983°S 47.717°E, 34 m, 06 Sep 2007–13 Sep 2007, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006614) (CAS). **Mahajanga:** Besalampy District, Marofototra dry forest, 17 km W of Besalampy, 16.72166°S 44.42366°E, 52 m, 19 Nov 2007–26 Nov 2007, M. Irwin, R. Harin'Hala, 1♂ (00044907) (CAS). **Toliara:** Andohahela Natl Park, Tsimelahy, Parcelle II, 24.93683°S 46.62666°E, 180 m, 27 Dec 2002–06 Jan 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006639, 00006643) (CAS); 05 Feb 2003–15 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006674) (CAS); 15 Feb 2003–26 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006628) (BMNH); 18 Mar 2003–28 Mar 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006626) (CAS); 29 Jun 2003–10 Jul 2003, M. Irwin, F. Parker, R. Harin'Hala, 6♂ (00006618, 00006627, 00006629, 00006630, 00006632, 00006634) (USNM); 17 Aug 2003–24 Aug 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006676) (CAS); 01 Oct 2003–11 Oct 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006647, 00006669) (SU); 30 Oct 2003–09 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006660, 00006666) (CAS); 30 Nov 2003–11 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006673, 00006675) (UCR); 21 Dec 2003–23 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006579–00006581) (AMNH); 15 Jan 2004–28 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006609–00006611) (CAS); 28 Jan 2004–12 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 6♂ (00006625, 00006633, 00006636, 00006638, 00006640, 00006644) (BMNH); 06 Mar 2004–18 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006617) (UCR). Berenty Special Reserve, 8 km NW Amboasary, 25.00666°S 46.30333°E, 85 m, 25 Oct 2002–26 Oct 2002, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006649, 00006663) (AMNH); 02 Nov 2002–09 Nov 2002, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006667, 00006681) (CAS); 30 Nov 2002–07 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006622) (UCR); 07 Dec 2002–14 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006665) (SU); 14 Dec 2002–16 Dec 2002, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006615) (CAS); 27 Dec 2002–07 Jan 2003, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006436, 00006442, 00006446) (USNM), 11♂ (00006448, 00006451, 00006601–00006608, 00006664) (CAS); 26 Jan 2003–05 Feb 2003, M. Irwin, F. Parker, R. Harin'Hala, 7♂ (00006695–00006701) (CAS); 24 Mar 2003–03 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 6♂ (00006566–00006570, 00045618) (CAS); 14 Apr 2003–24 Apr 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00005357, 00006624) (AMNH); 24 Apr 2003–03 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006599, 00006600) (MNHN); 14 May 2003–25 May 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006595, 00006596) (CAS); 25 May 2003–04 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006679) (UCR); 04 Jun 2003–10 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006646, 00006678) (CAS); 08 Nov 2003–15 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006677) (CAS); 22 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006525–00006527) (MNHN); 14 Dec 2003–21 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006577, 00006578) (CAS); 21 Dec 2003–02 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006592, 00006593) (CAS); 02 Jan 2004–13 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006558) (SU); 13 Jan 2004–23 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006561, 00006562) (CAS); 04 Feb 2004–15 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006571, 00006572) (CAS); 15 Feb 2004–02 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006619, 00006621, 00006680) (BMNH); 02 Mar 2004–11 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006559, 00006560) (CAS); 05 Apr 2004–15 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006563, 00006564) (MNHN); 30 Apr 2004–01 May 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006443) (SU); 14 May 2004–27 May 2004, M. Irwin, F. Parker, R. Harin'Hala, 4♂ (00006582–00006585) (CAS); 20 Jun 2004–30 Jun 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006657) (CAS); 30 Jun 2004–11 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006691, 00006692) (CAS); 25 Jul 2004–07 Aug 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006574–00006576) (MNHN); 22 Aug 2004–01 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006565) (SU); 01 Sep 2004–08 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006591) (UCR). Berenty Special Reserve, 8 km NW Amboasary, 25.021°S 46.3055°E, 35 m, 10 Jun 2003–19 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006524) (CAS); 22 Nov 2003–30 Nov 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006694) (UCR); 07 Dec 2003–14 Dec 2003, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006689, 00006690) (AMNH); 21 Dec 2003–01 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006682,

00006683) (CAS); 02 Jan 2004–13 Jan 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006686) (SU); 15 Feb 2004–28 Feb 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006620) (CAS); 28 Feb 2004–24 Mar 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006597) (CAS); 24 Mar 2004–04 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006573, 00006685) (USNM); 04 Apr 2004–15 Apr 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006594) (CAS); 29 Apr 2004–11 Jun 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006612, 00006613) (BMNH); 23 Jun 2004–04 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 3♂ (00006468, 00006650, 00006684) (AMNH); 04 Jul 2004–18 Jul 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006623) (MNHN); 31 Jul 2004–15 Aug 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006693) (CAS); 29 Aug 2004–08 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006589) (SU); 08 Sep 2004–21 Sep 2004, M. Irwin, F. Parker, R. Harin'Hala, 2♂ (00006687, 00006688) (CAS); 21 Sep 2004–07 Oct 2004, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006590) (UCR). Beza Mahafaly Reserve, Parcelle II near Bellevue, 23.68983°S 44.5755°E, 180 m, 16 Jan 2002–18 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00006637) (CAS); 18 Jan 2002–25 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00044812) (UCR). Beza Mahafaly Reserve, Parcelle I near research station, 23.6865°S 44.591°E, 165 m, 15 Oct 2001–10 Nov 2001, M.E. Irwin, F.D. Parker, R. Harin'Hala, 1♂ (00045584) (CAS); 10 Nov 2001–21 Nov 2001, R. Harin'Hala, 1♂ (00006586) (UCR); 21 Nov 2001–28 Nov 2001, R. Harin'Hala, 2♂ (00006099, 00006118) (SU); 28 Nov 2001–04 Dec 2001, R. Harin'Hala, 1♂ (00006653) (CAS); 04 Dec 2001–11 Dec 2001, R. Harin'Hala, 2♂ (00006645, 00006670) (BMNH); 18 Dec 2001–25 Dec 2001, R. Harin'Hala, 2♂ (00006119, 00006437) (CAS), 2♂ (00006635, 00006642) (MNHN); 16 Jan 2002–18 Jan 2002, R. Harin'Hala, 2♂ (00006654, 00006659) (USNM); 01 Feb 2002–08 Feb 2002, R. Harin'Hala, 1♂ (00006668) (USNM); 10 Apr 2002–29 Apr 2002, R. Harin'Hala, 2♂ (00006658, 00006662) (CAS); 08 Jun 2002–18 Jun 2002, R. Harin'Hala, 2♂ (00006440, 00006444) (AMNH); 28 Jun 2002–07 Jul 2002, R. Harin'Hala, 1♂ (00006434) (UCR); 07 Jul 2002–18 Jul 2002, R. Harin'Hala, 1♂ (00006652) (CAS); 09 Sep 2002–20 Sep 2002, R. Harin'Hala, 2♂ (00006648, 00006651) (SU); 20 Sep 2002–05 Oct 2002, R. Harin'Hala, 1♂ (00006656) (CAS); 09 Jan 2003–23 Jan 2003, R. Harin'Hala, 1♂ (00006641) (CAS); 21 Apr 2003–29 Apr 2003, R. Harin'Hala, 1♂ (00006616) (UCR). Cap Ste Marie Special Reserve, 74 km S of Tsihombe, 25.58766°S 45.163°E, 37 m, 02 Jun 2003–10 Jun 2003, M. Irwin, F. Parker, R. Harin'Hala, 1♂ (00006447) (CAS). Mikea Forest, NW of Manombo, 22.90366°S 43.4755°E, 30 m, 06 Jan 2002–16 Jan 2002, M. Irwin, R. Harin'Hala, 1♂ (00006661) (CAS); 28 Mar 2002–08 Apr 2002, M. Irwin, R. Harin'Hala, 2♂ (00006587, 00006588) (SU); 29 Apr 2002–09 May 2002, M. Irwin, R. Harin'Hala, 1♂ (00006672) (UCR); 06 Mar 2003–17 Mar 2003, M. Irwin, R. Harin'Hala, 1♂ (00006671) (UCR); 27 Jul 2003–03 Aug 2003, M. Irwin, R. Harin'Hala, 2♂ (00006631, 00006655) (CAS).

***Toxopus vazimba*, new species**

Plates 4, 7, 11, 19I, 20L, 21L; map 10

DIAGNOSIS: Males recognized among other species in *Toxopus* by the coloration, dense vestiture, interocular sulcus anterior to the hind margin of the eye, smooth posterior pronotal lobe, and intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII. This species is similar to *T. steineri*, *T. namoroka*, *T. basalis*, and *T. brucei*, but is distinguished from these species by the features mentioned.

DESCRIPTION: **MALE:** Body length: 11.27 mm (holotype), 11.27–12.71 mm. COLORATION: Blackish with pale yellow clypeus, postclypeal medial longitudinal depression, antennifer, scape basally, pedicel basally, antennal segment VII, anterolateral and anteromedial margins of pronotum, meso- and metasterna, corium basally, coxae, trochanters, forefemur ventrally and basally, mid and hind femora basally, fore- and mid tibiae except lateral stripes, hind tibia except apically, tarsi, anterior areas of laterotergites, abdominal sternites medially, lateral margin of sternite II, anterolateral and posterolateral margins of sternites III–VI, and anterolateral margin of sternite VII. Labium and antennal segment VI brown. VESTITURE: Dense; other features as in generic description. STRUCTURE: HEAD: Subquadrate in lateral view (pl. 13K); longer than wide in dorsal view; ventrally with deep medial depression; anteocular region longer than postocular (pl. 13K); postclypeus with deep, broad medial longitudinal depression to interocular sulcus; synthlipsis about two times width of eye; interocular sulcus anterior to hind margin of eye; postocular narrow in dorsal view (pl. 13A); ocelli large, located on shallow median tubercle (pl. 13K), separated by less than diameter of ocellus; eye about one-third of head length, not reaching

dorsal and ventral head surfaces; antenna inserted dorsally on head; pedicel about one-fourth longer than scape, slightly curved; labium stout; labial segment III ventrally straight (pl. 13K). Thorax: Anterior pronotal lobe with very small anterolateral projections (pl. 15B); posterior pronotal lobe smooth; pronotal transverse furrow divided by paramedian longitudinal ridges (pl. 15B); lateral depressions of posterior pronotal lobe weakly transversely striated; wings spread out in specimens. Abdomen: Apex rounded; intersegmental sutures carinulate between sternites II–VI and laterally between VI and VII; pygophore process subtriangular in caudal view (pl. 19I), not surpassing posterior margin of pygophore, apex rounded; BPE shorter than basal plate; endosomal struts not reaching posterior margin of DPS (pl. 21L), with anterior and posterior ventral processes (pl. 22G); area of endosomal struts–DPS fusion elongate ovoid (pl. 21L); endosoma medially sclerotized (pl. 21L).

Etymology: The species epithet is a noun in apposition and is named after Tombeau Vazimba, Madagascar.

Distribution: Known from Tsingy de Bemaraha National Park in the Mahajanga province in Madagascar (map 10).

Holotype: Male: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 3.4 km 93°E Bekopaka, Tombeau Vazimba, 19.14194°S 44.82805°E, 50 m, 06 Nov 2001–10 Nov 2001, Fisheret al. (00006964) (CAS).

Paratypes: **Madagascar: Mahajanga:** Parc National Tsingy de Bemaraha, 3.4 km 93°E Bekopaka, Tombeau Vazimba, 19.14194°S 44.82805°E, 50 m, 06 Nov 2001–10 Nov 2001, Fisher et al., 1♂ (00006472) (CAS), 1♂ (00006730) (SU), 1♂ (00006967) (UCR). Parc National Tsingy de Bemaraha, 10.6 km ESE 123° Antsalova, 19.70944°S 44.71806°E, 150 m, 16 Nov 2001–20 Nov 2001, Fisheret al., 1♂ (00007109) (CAS).

CONCLUSION

The Madagascan invertebrate fauna has not been thoroughly documented, but the situation is improving thanks to large taxonomic surveys such as the one that has enabled this taxonomic project. Prior to our monograph, only 10 described species of millipede assassin bugs were known from the island. Here, we described 63 new species and three new genera of Ectrichodiinae that are endemic to Madagascar. This drastic increase in described diversity presents an opportunity to investigate the timing and origin of Madagascan Ectrichodiinae using phylogenetic, divergence dating, and biogeographic analyses; a companion paper investigating these questions is in review (Forthman and Weirauch, in review). Phylogenetic studies of Madagascan plants, vertebrates, and some invertebrates support close relationships to either Afrotropical or Oriental lineages (see Vences, 2004; Yoder and Nowak, 2006; Warren et al., 2010). Assuming their monophyly, Afrotropical-Madagascan relationships are evident in the genera *Glymmatophora* and *Maraenaspis*; both genera have the bulk of species restricted to mainland Africa. Other Madagascan genera, e.g., *Gibbosella* and *Marojejycoris*, share morphological similarities with Afrotropical taxa, e.g., *Synavecoris*, such as the drab coloration, ovoid head shape, and circular spiracles. However, male specimens of *Gibbosella* also share some morphological features (e.g., distal part of M and Cu fused or nearly so; dorsal laterotergites with posterior tubercles) with Oriental taxa, such as *Caecina* Stål, 1863, and *Bannania* Hsiao, 1973. Only formal phylogenetic analyses including comprehensive taxon sampling in the Afrotropical and Oriental regions, as well as morphological and molecular characters, will shed light on the phylogenetic relationships and origins of Madagascan Ectrichodiinae.

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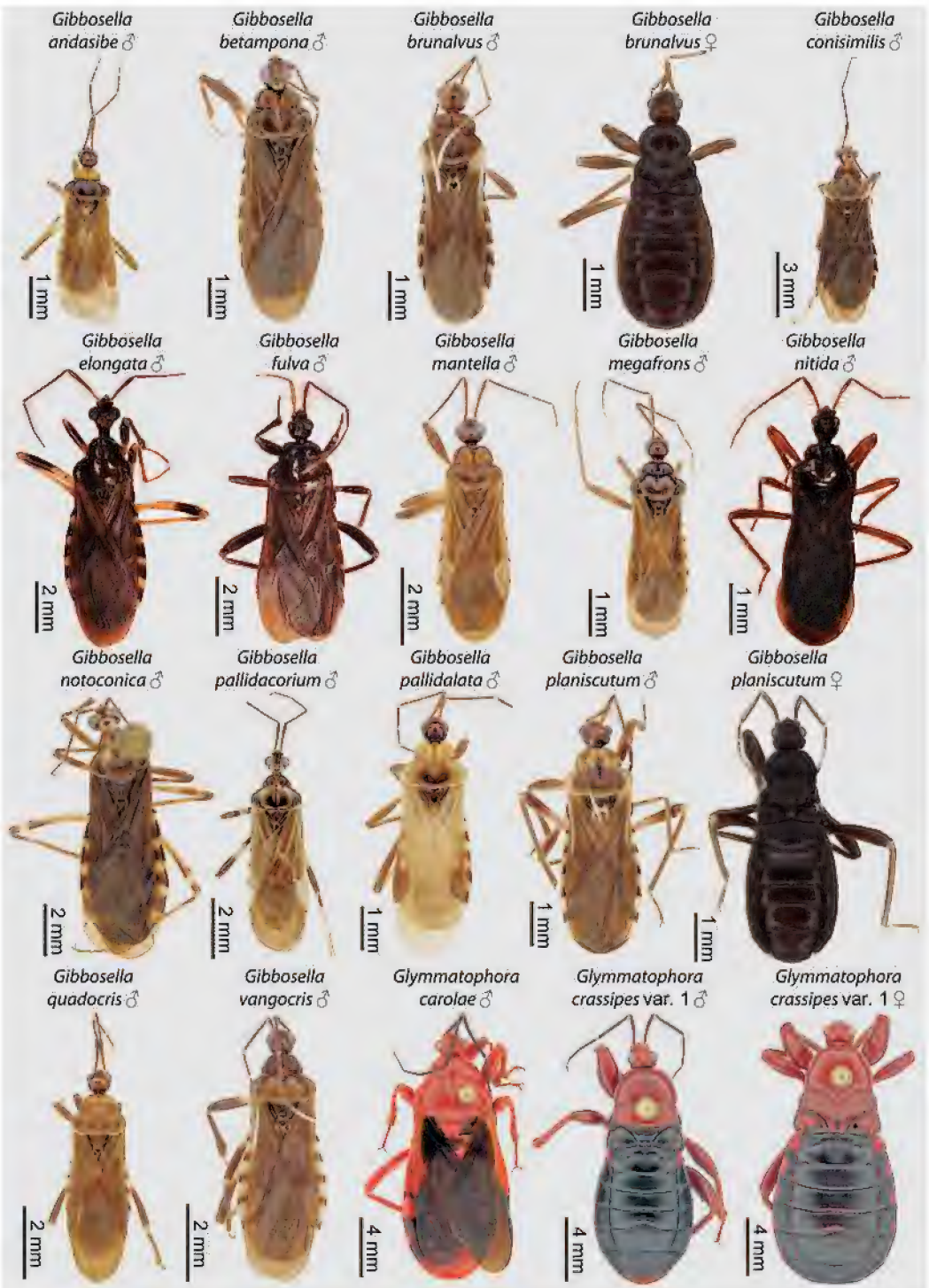

PLATE 1. Dorsal habitus of *Gibbosella* species, *Glymmatophora carolae*, and *Glymmatophora crassipes*.

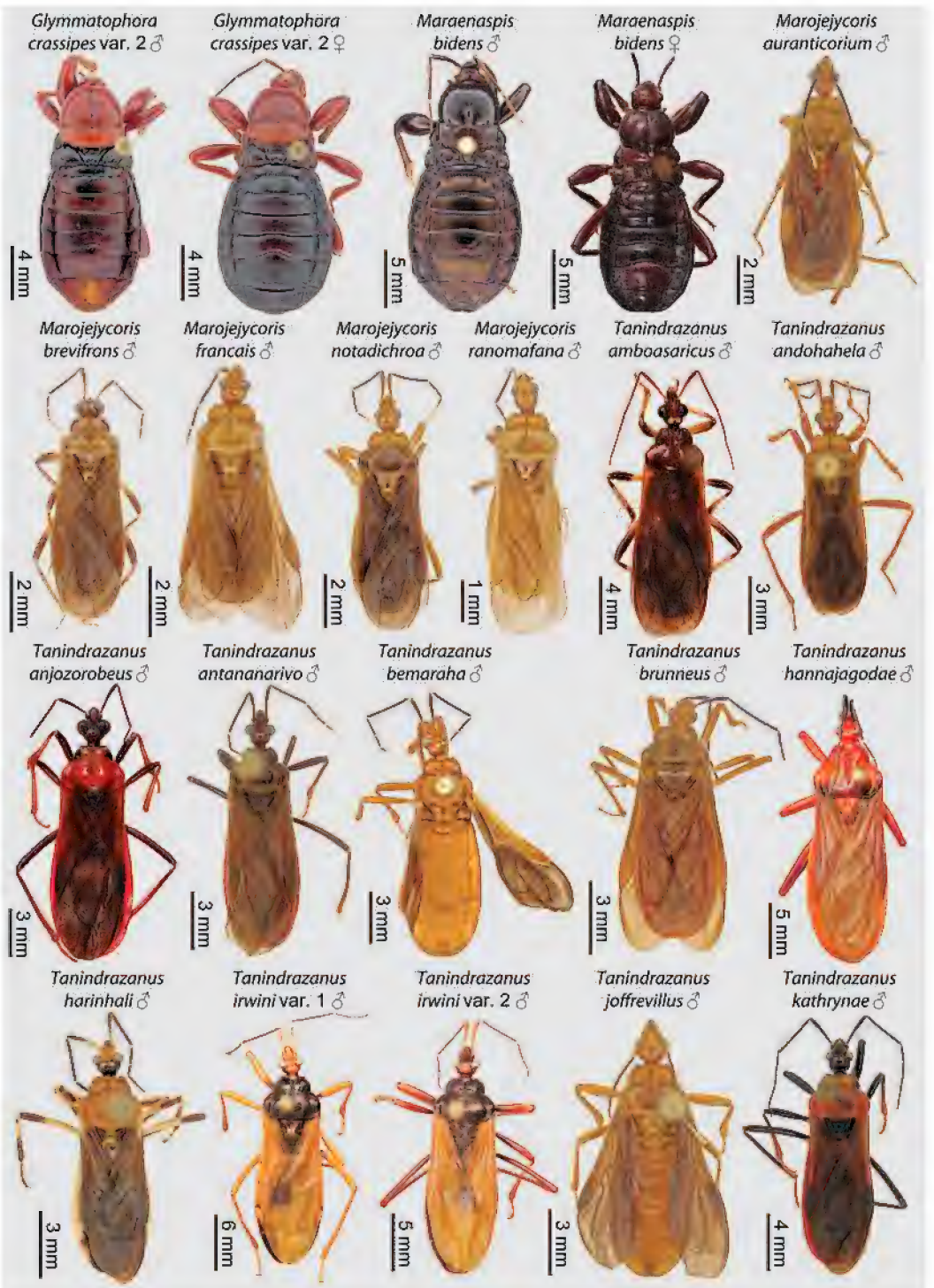

PLATE 2. Dorsal habitus of *Glymmatophora crassipes*, *Maraenaspis bidens*, *Marojejycoris* species, and *Tanindrazanus* species (*T. amboasaricus* – *T. kathrynae*).

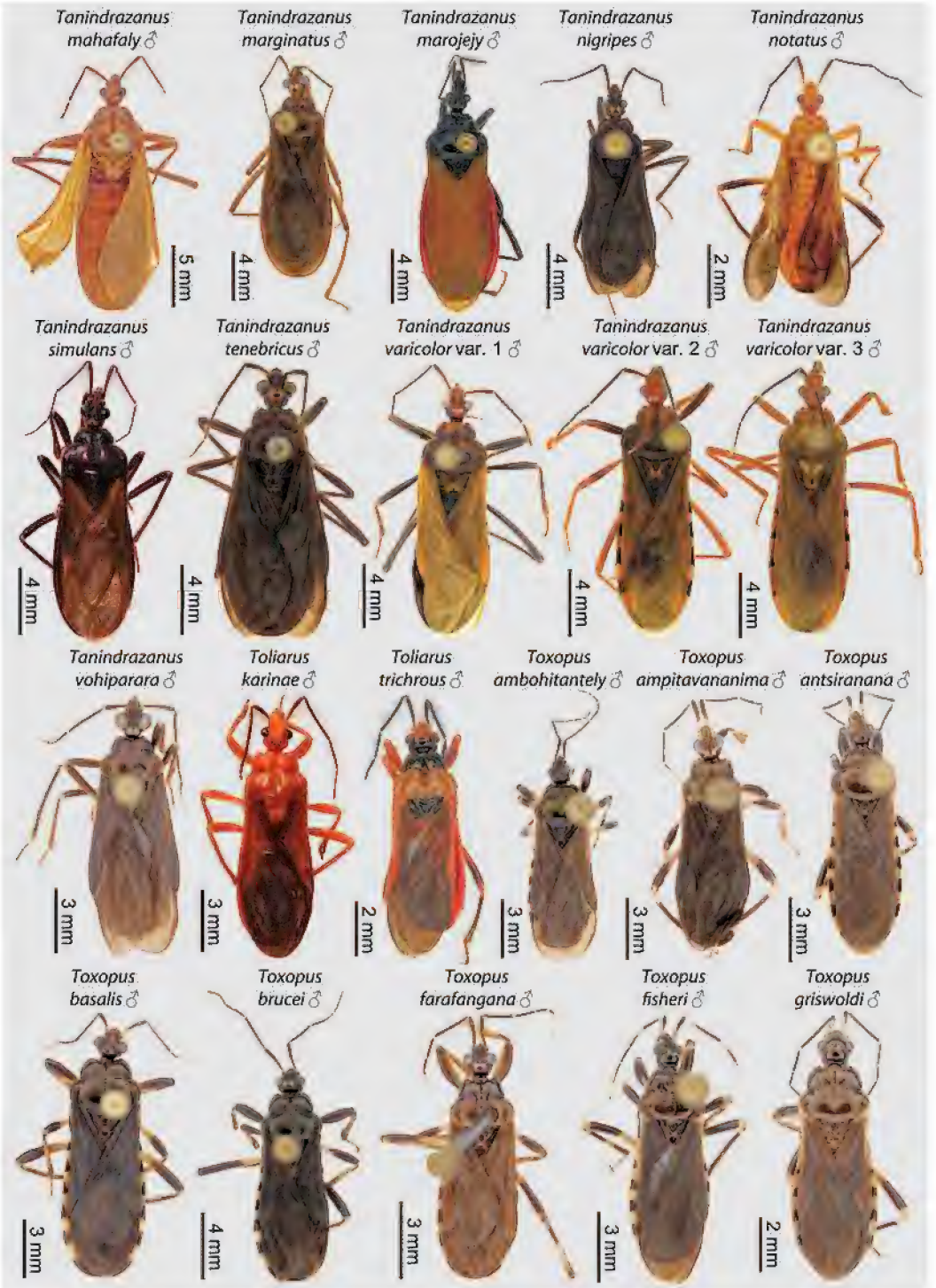

PLATE 3. Dorsal habitus of *Tanindrazanus* species (*T. mahafaly* – *T. vohiparara*), *Toliarus* species, and *Toxopus* species (*T. ambohitantely* – *T. griswoldi* [male]).

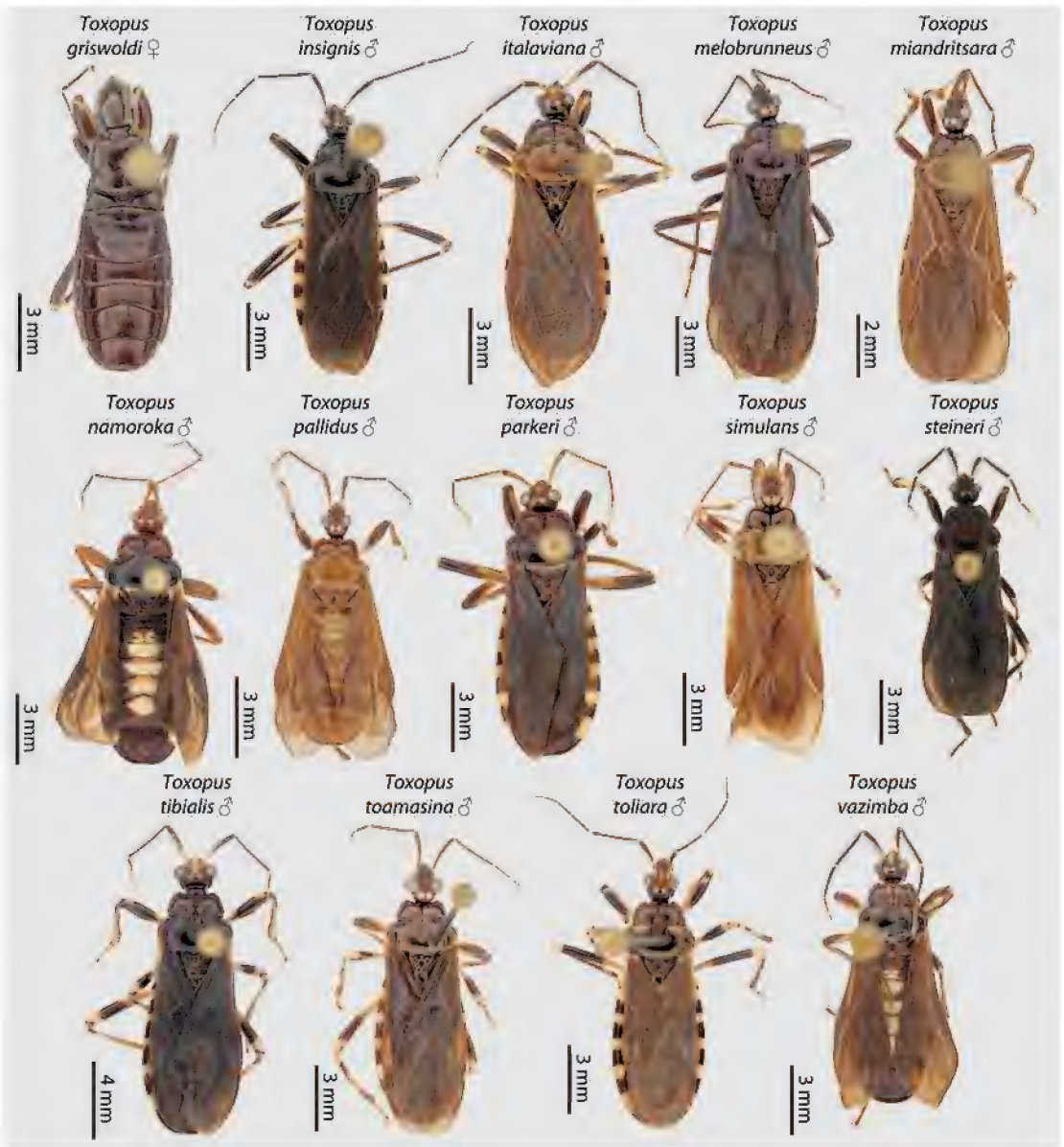

PLATE 4. Dorsal habitus of *Toxopus* species (*T. griswoldi* [female] – *T. vazimba*).

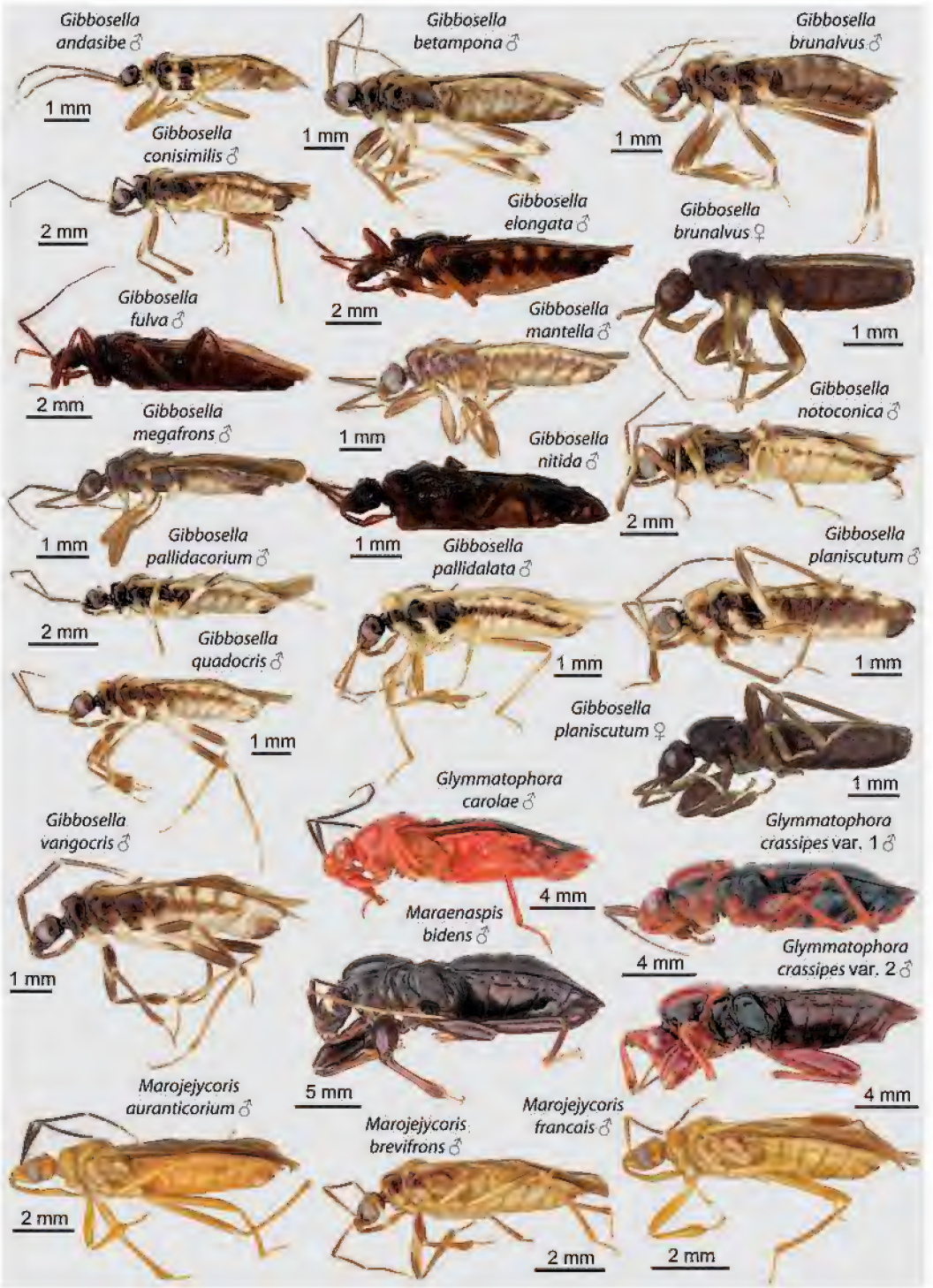

PLATE 5. Lateral habitus of *Gibbosella* species, *Glymmatophora* species, *Maraenaspis bidens,* and *Marojejycoris* species (*M. auranticorium* – *M. francais*).

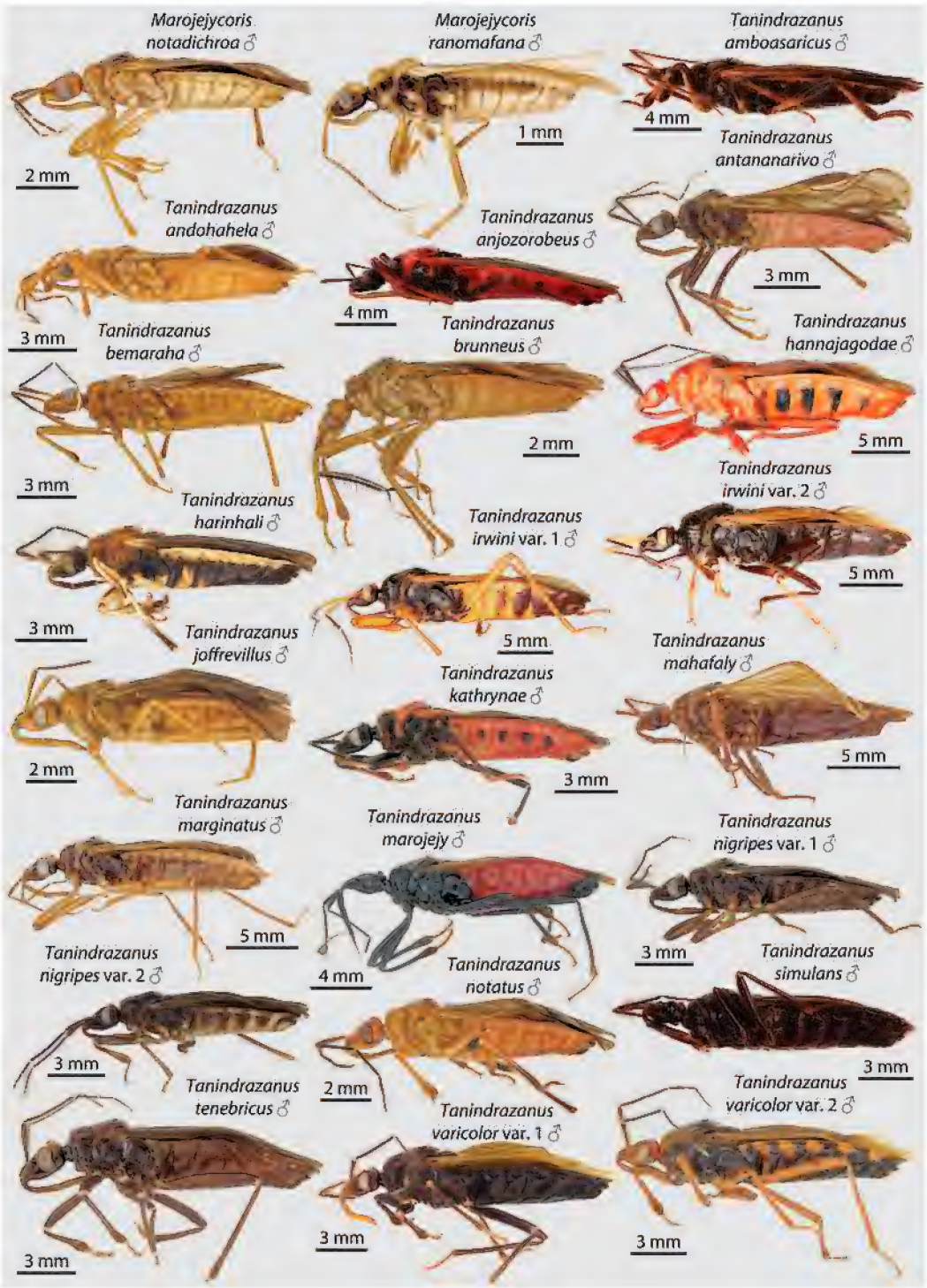

PLATE 6. Lateral habitus of *Marojejycoris notadichroa*, *Marojejycoris francais*, and *Tanindrazanus* species (*T. amboasaricus* – *T. varicolor*).

PLATE 7. Lateral habitus of *Tanindrazanus varicolor*, *Tanindrazanus vohiparara*, *Toliarus* species, and *Toxopus* species.

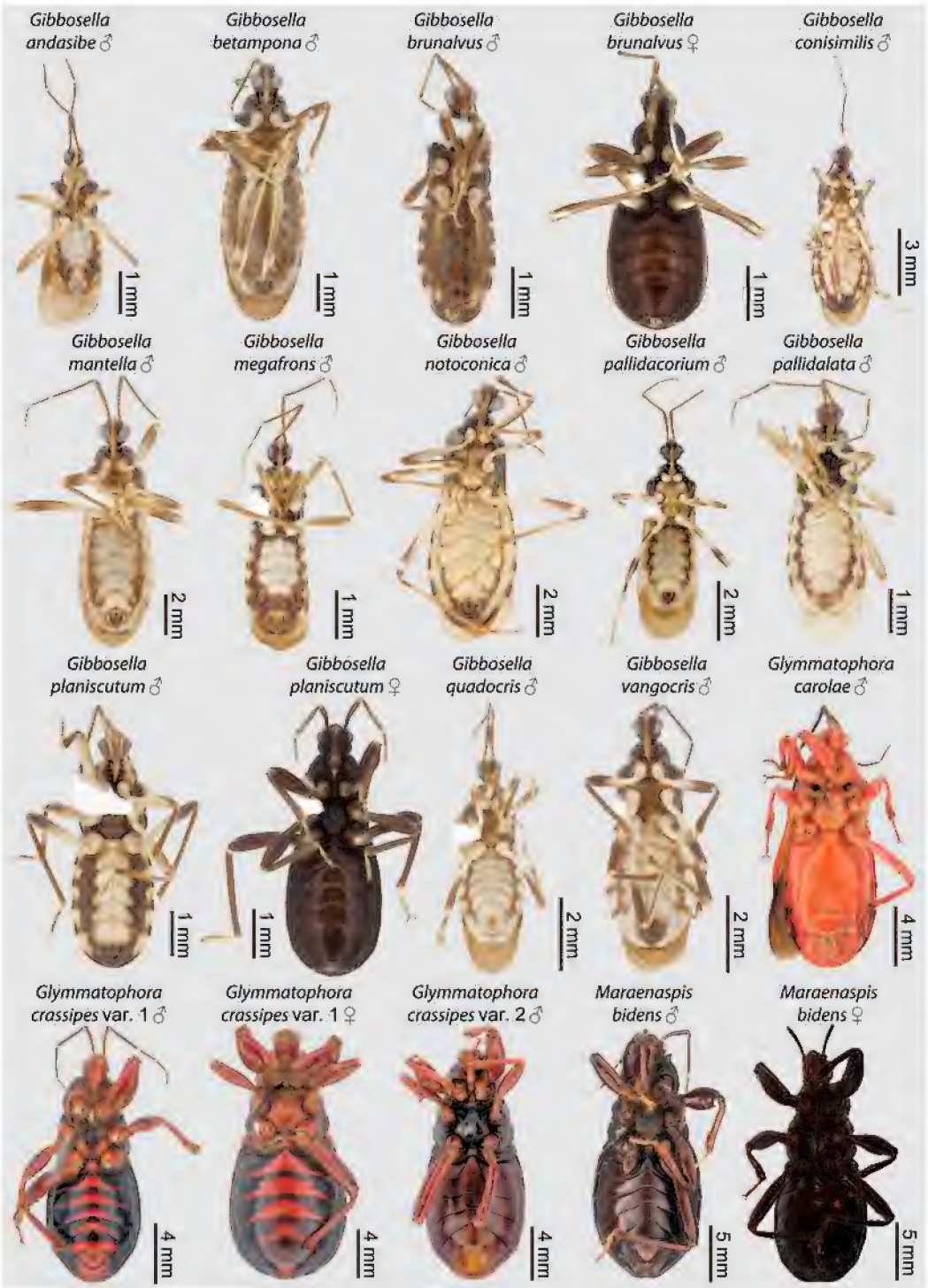

PLATE 8. Ventral habitus of *Gibbosella* species, *Glymmatophora* species, and *Maraenaspis bidens*.

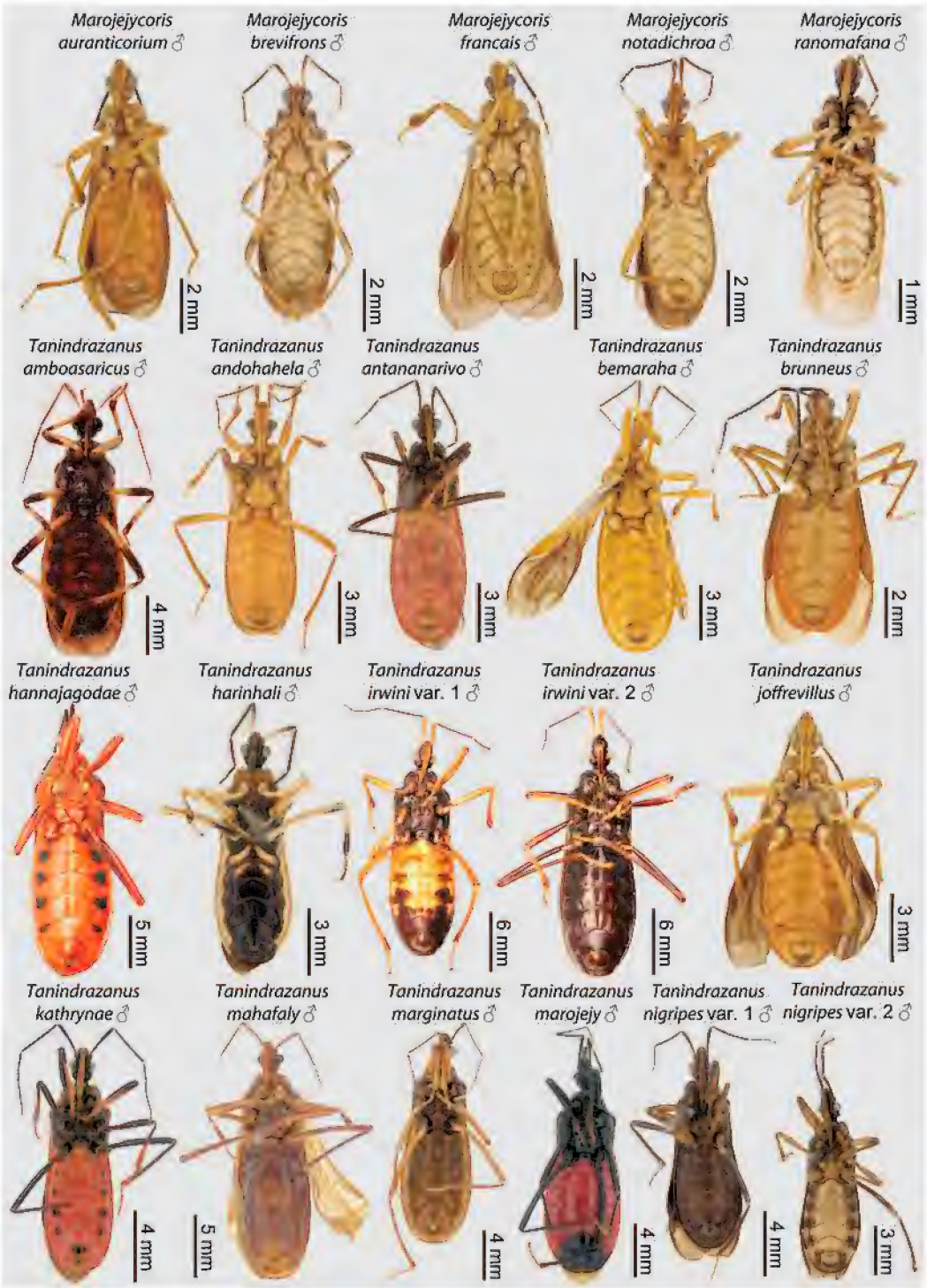

PLATE 9. Ventral habitus of *Marojejycoris* species and *Tanindrazanus* species (*T. amboasaricus* – *T. nigripes*).

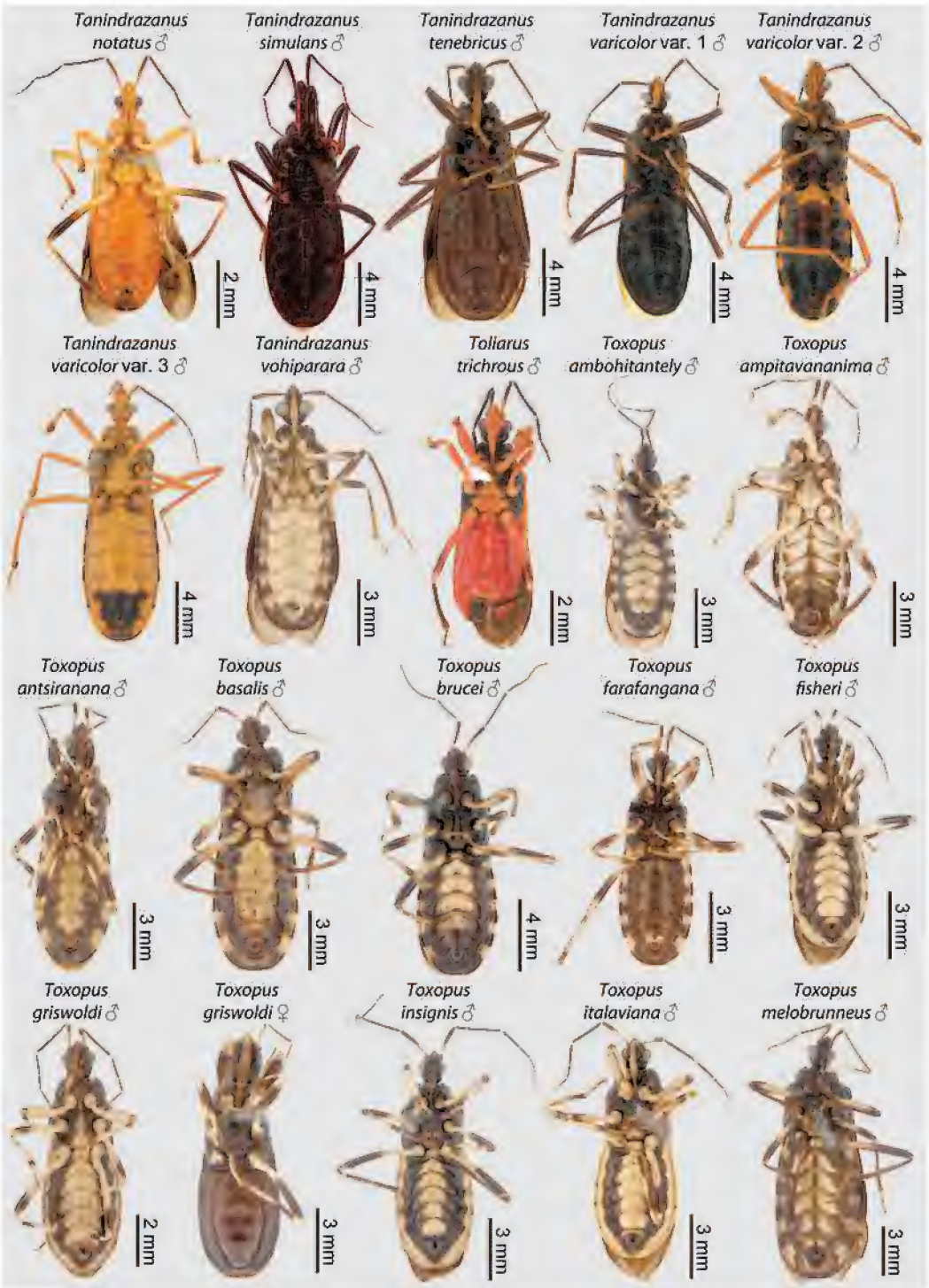

PLATE 10. Ventral habitus of *Tanindrazanus* species (*T. notatus* – *T. vohiparara*), *Toliarus trichrous*, and *Toxopus* species (*T. ambohitantely* – *T. melobrunneus*).

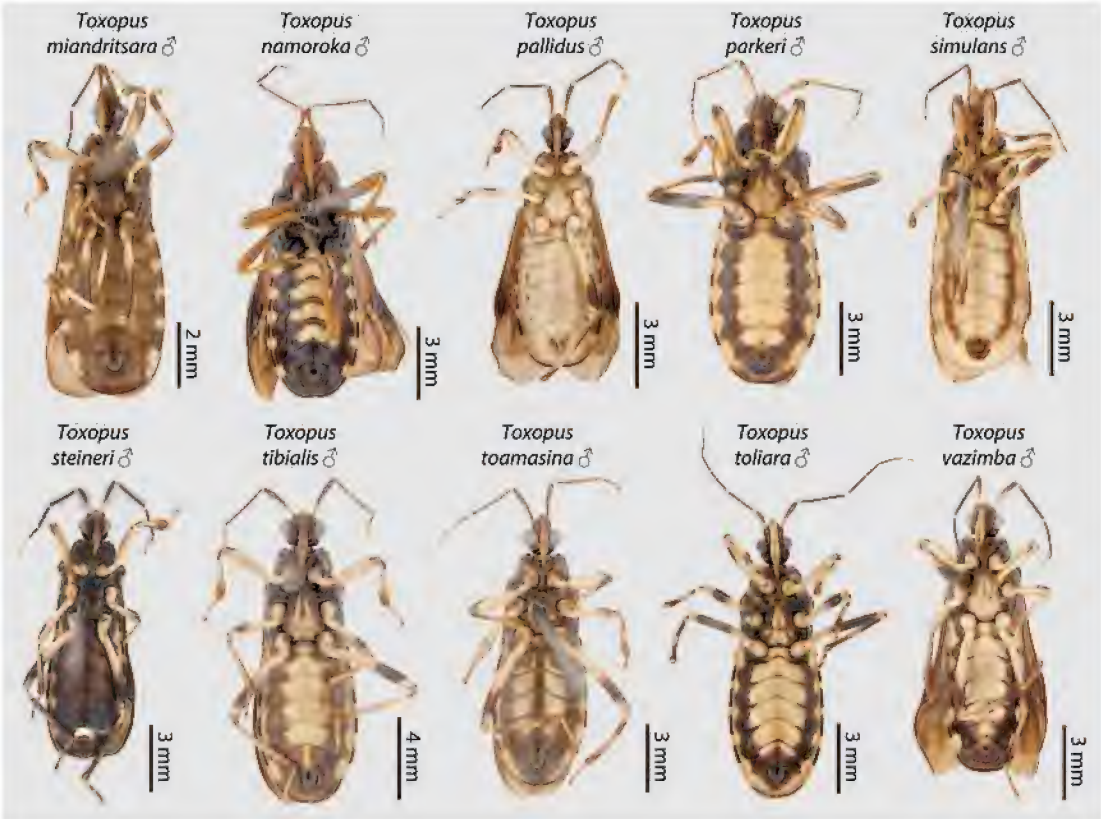

PLATE 11. Ventral habitus of *Toxopus* species (*T. miandritsara* – *T. vazimba*).

Gibbosella elongata Chłond ♀
Glymmatophora crassipes Horváth ♀
Gibbosella mirabilis Chłond ♀
Synavecoris dimorphus Villiers ♂
Toxopus signoretii (Reuter) ♂

PLATE 12. Dorsal and lateral habitus of holotypes of *Gibbosella elongata*, *Gi. mirabilis*, *Glymmatophora crassipes*, *Synavecoris dimorphus*, and *Toxopus signoretii*.

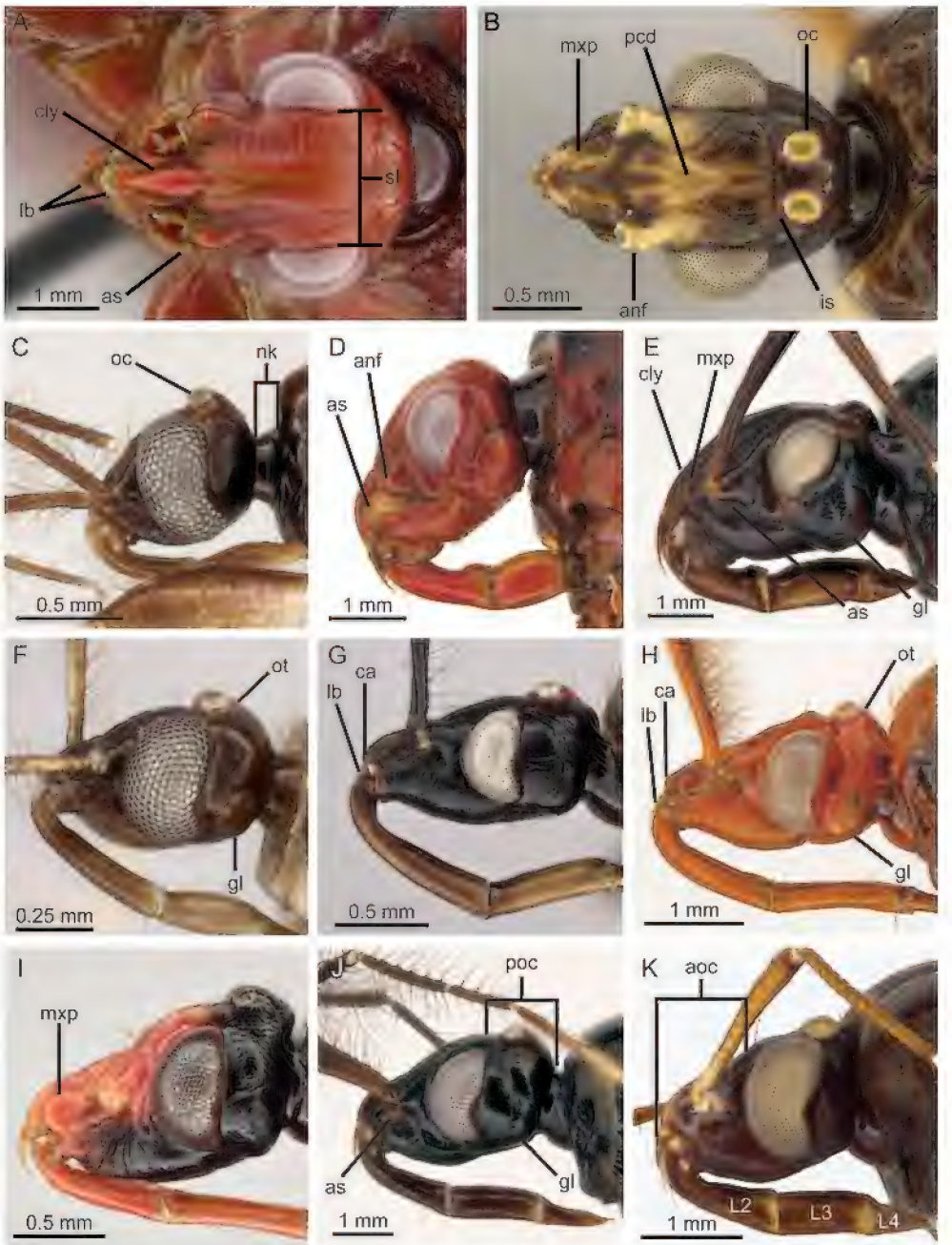

PLATE 13. Dorsal (**A, B**) and lateral (**C–K**) head structures. **A.** *Glymmatophora crassipes*, **B.** *Toxopus italaviana*, **C.** *Gibbosella mantella*, **D.** *Glymmatophora crassipes*, **E.** *Maraenaspis bidens*, **F.** *Marojejycoris brevifrons*, **G.** *Tanindrazanus kathrynae*, **H.** *Tanindrazanus varicolor*, **I.** *Toliarus trichrous*, **J.** *Toxopus ambohitantely*, **K.** *Toxopus parkeri*.

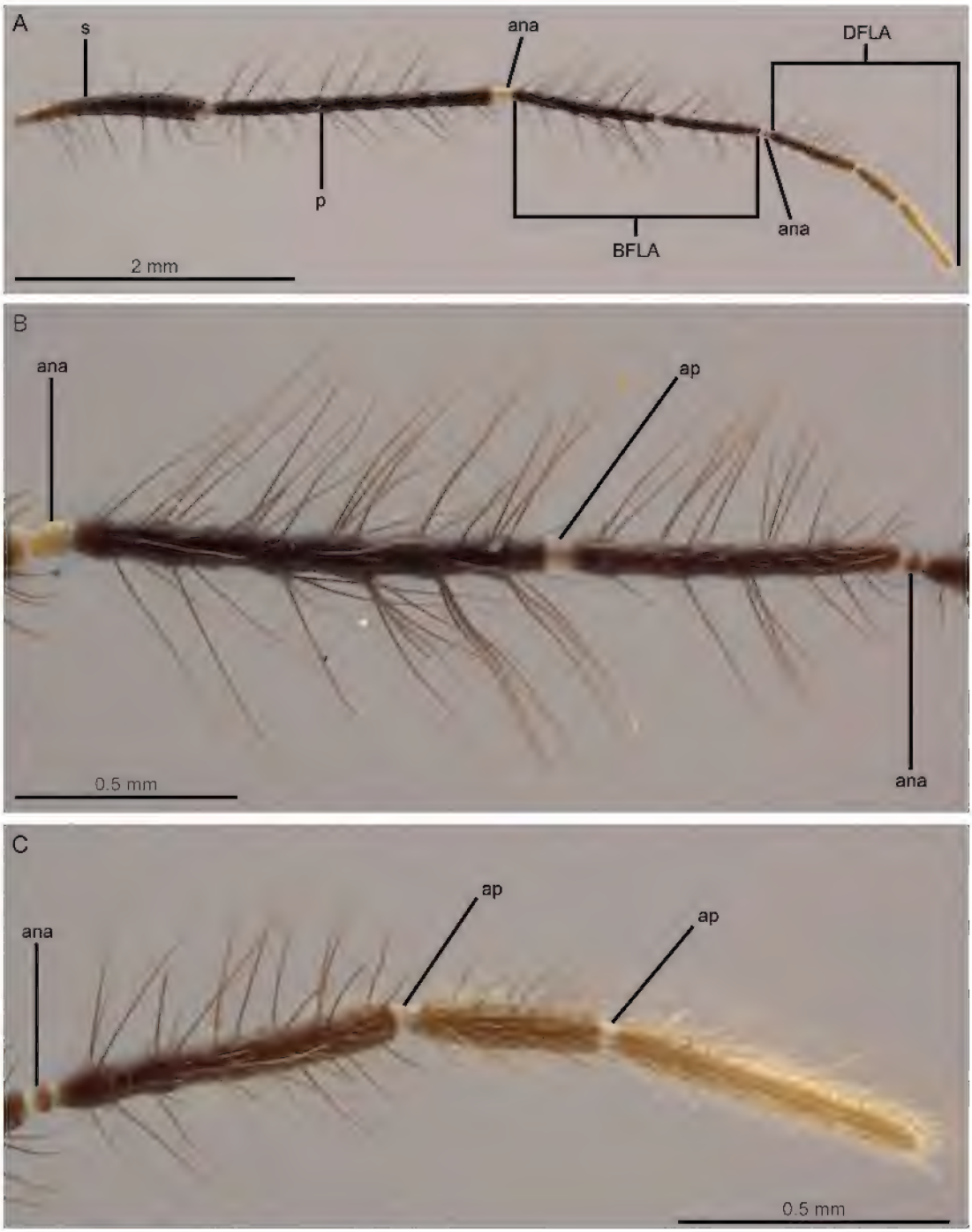

PLATE 14. Lateral antennal morphology of *Toxopus insignis*. **A.** Antenna, **B.** basiflagellomere, **C.** distiflagellomere.

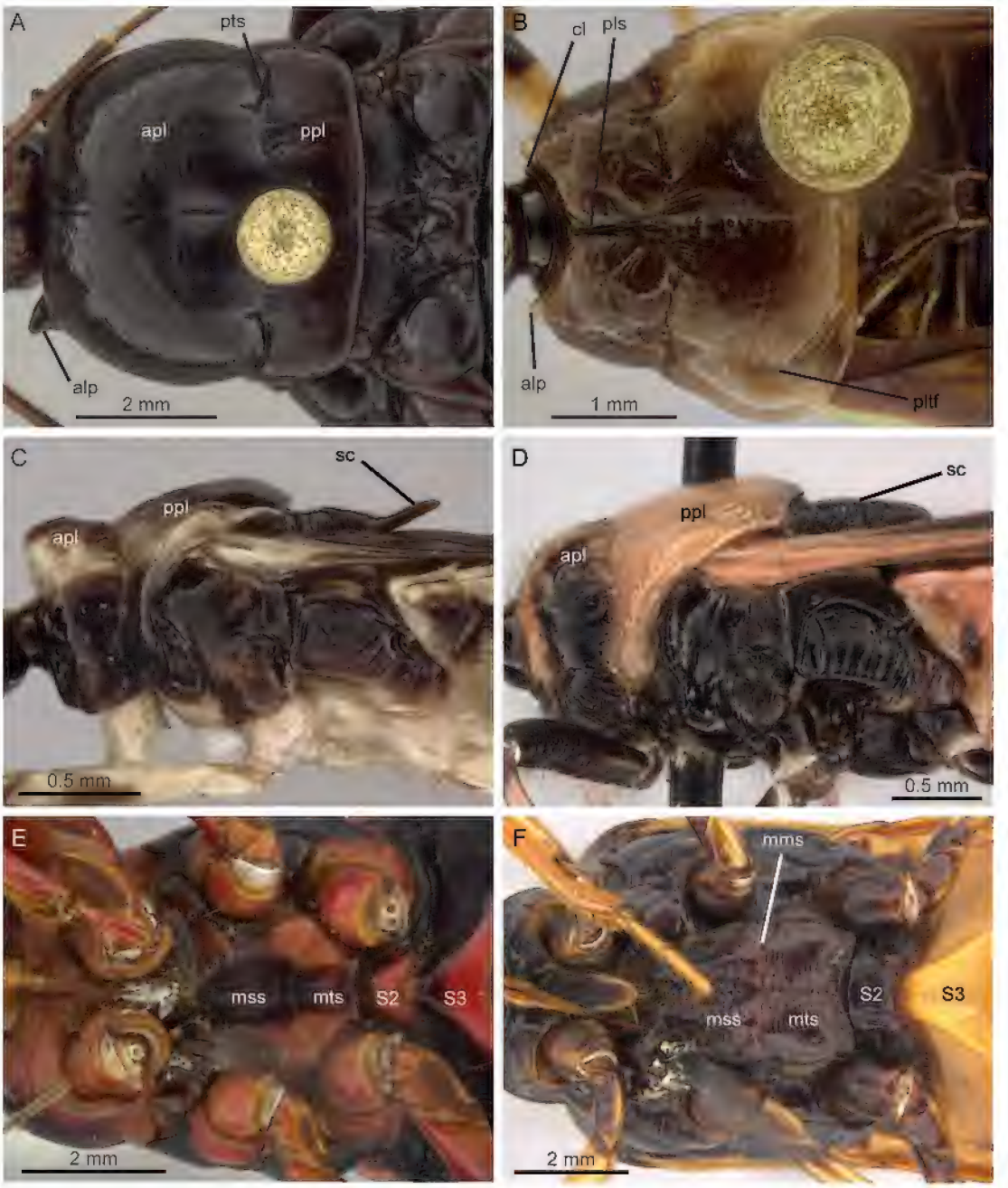

PLATE 15. Dorsal (**A, B**), lateral (**C, D**), and ventral (**E, F**) thoracic structures. **A.** *Maraenaspis bidens*, **B.** *Toxopus italaviana*, **C.** *Gibbosella conisimilis*, **D.** *Tanindrazanus kathrynae*, **E.** *Glymmatophora crassipes*, **F.** *Tanindrazanus irwini*.

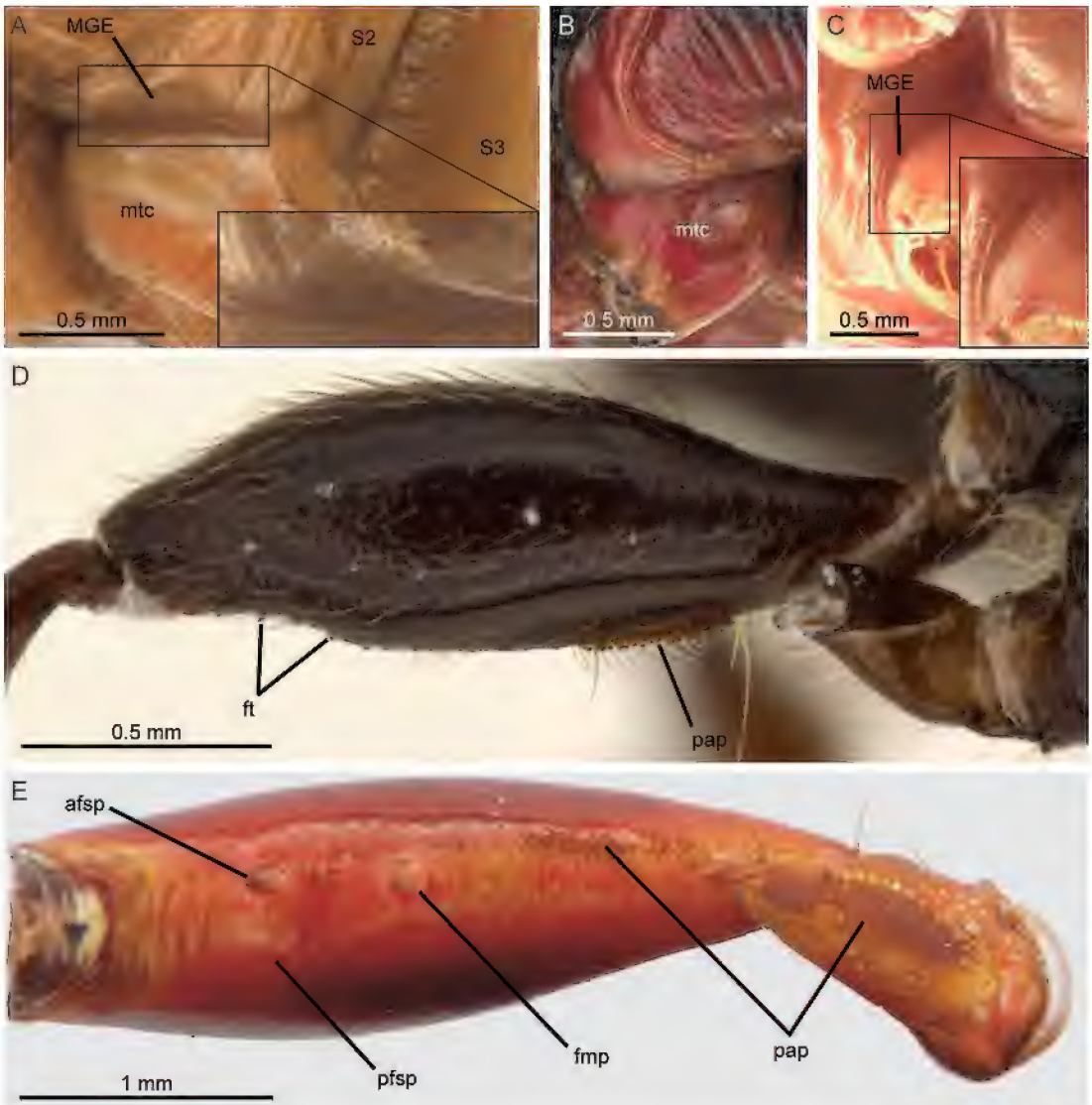

PLATE 16. Metathoracic gland evaporatorium (**A–C**) and femoral armature (**D, E**). **A.** *Tanindrazanus varicolor* (lateral), **B.** *Glymmatophora crassipes* (lateral), **C.** *Glymmatophora carolae* (ventral), **D.** *Gibbosella* sp., **E.** *Glymmatophora crassipes*.

PLATE 17. Wing morphology. **A.** *Gibbosella planiscutum*, **B.** *Glymmatophora carolae*, **C.** *Tanindrazanus varicolor*.

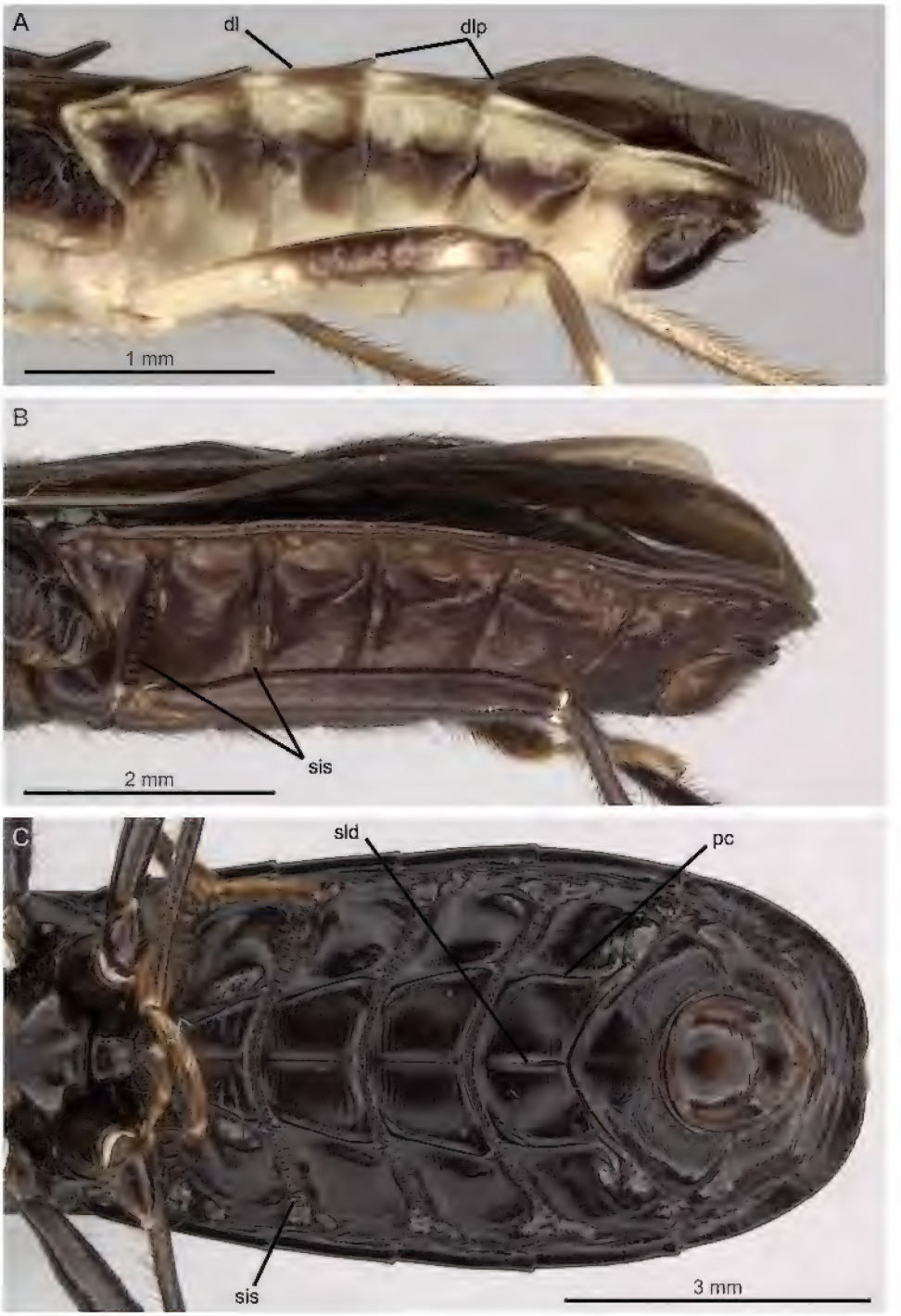

PLATE 18. Lateral (**A, B**) and ventral (**C**) abdominal morphology. **A.** *Gibbosella conisimilis*, **B.** *Tanindrazanus tenebricus*, **C.** *Distirogaster* sp.

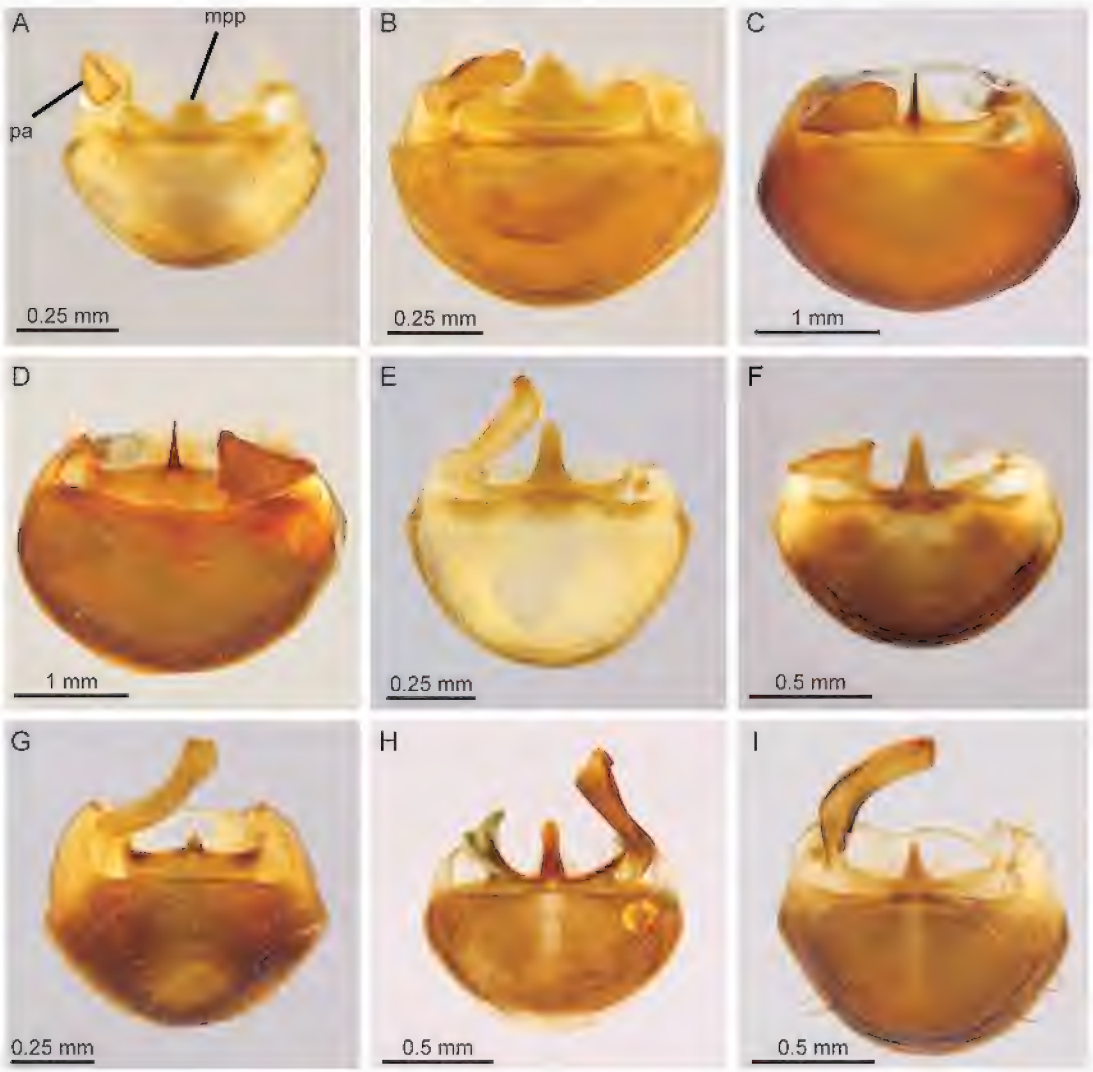

PLATE 19. Pygophore morphology in caudal view. **A.** *Gibbosella quadocris*, **B.** *Gibbosella vangocris*, **C.** *Glymmatophora crassipes*, **D.** *Maraenaspis bidens*, **E.** *Marojejycoris auranticorium*, **F.** *Tanindrazanus kathrynae*, **G.** *Toliarus trichrous*, **H.** *Toxopus fisheri*, **I.** *Toxopus vazimba*.

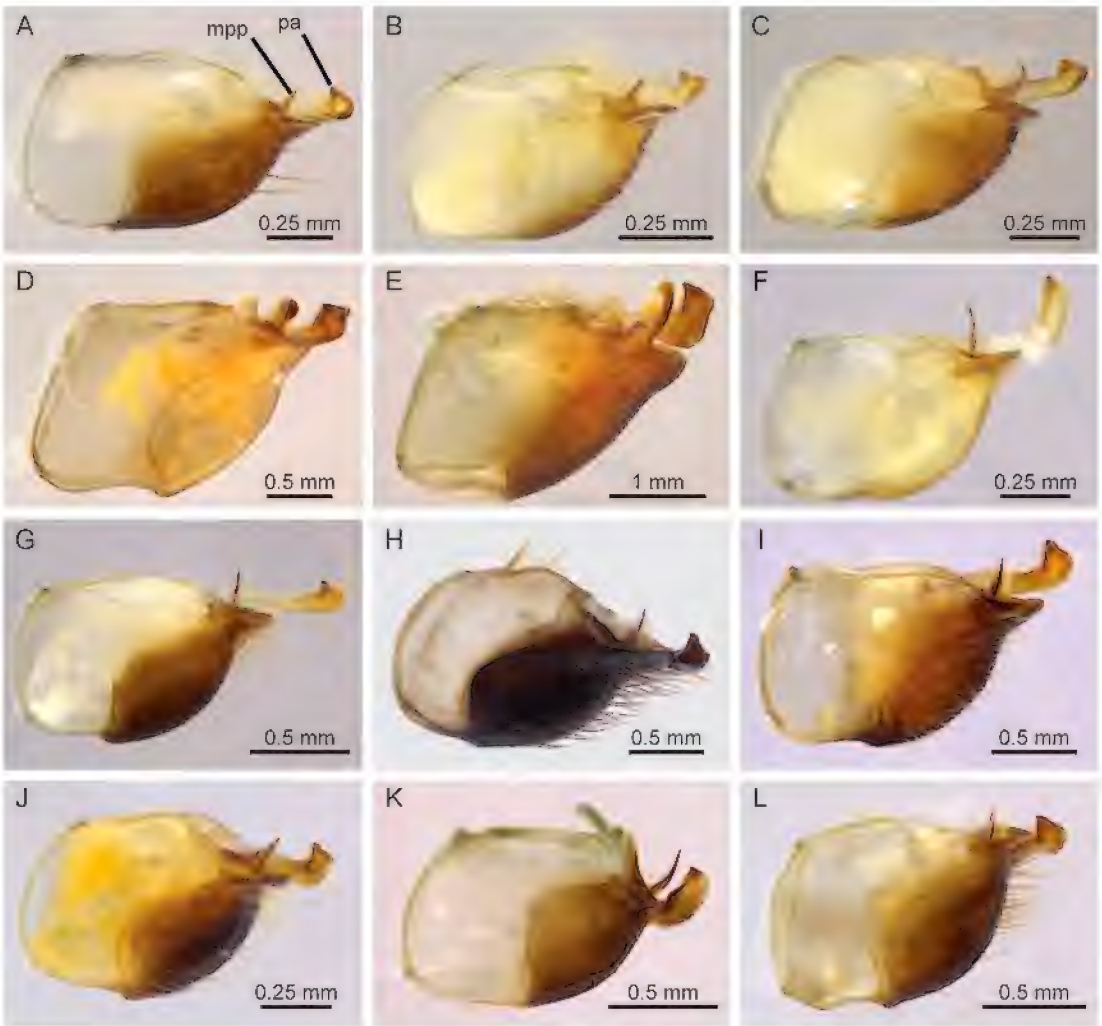

PLATE 20. Pygophore morphology in lateral view. **A.** *Gibbosella notoconica*, **B.** *Gibbosella quadocris*, **C.** *Gibbosella vangocris*, **D.** *Glymmatophora carolae*, **E.** *Maraenaspis bidens*, **F.** *Marojejycoris auranticorium*, **G.** *Tanindrazanus kathrynae*, **H.** *Tanindrazanus marojejy*, **I.** *Tanindrazanus varicolor*, **J.** *Toliarus trichrous*, **K.** *Toxopus fisheri*, **L.** *Toxopus vazimba*.

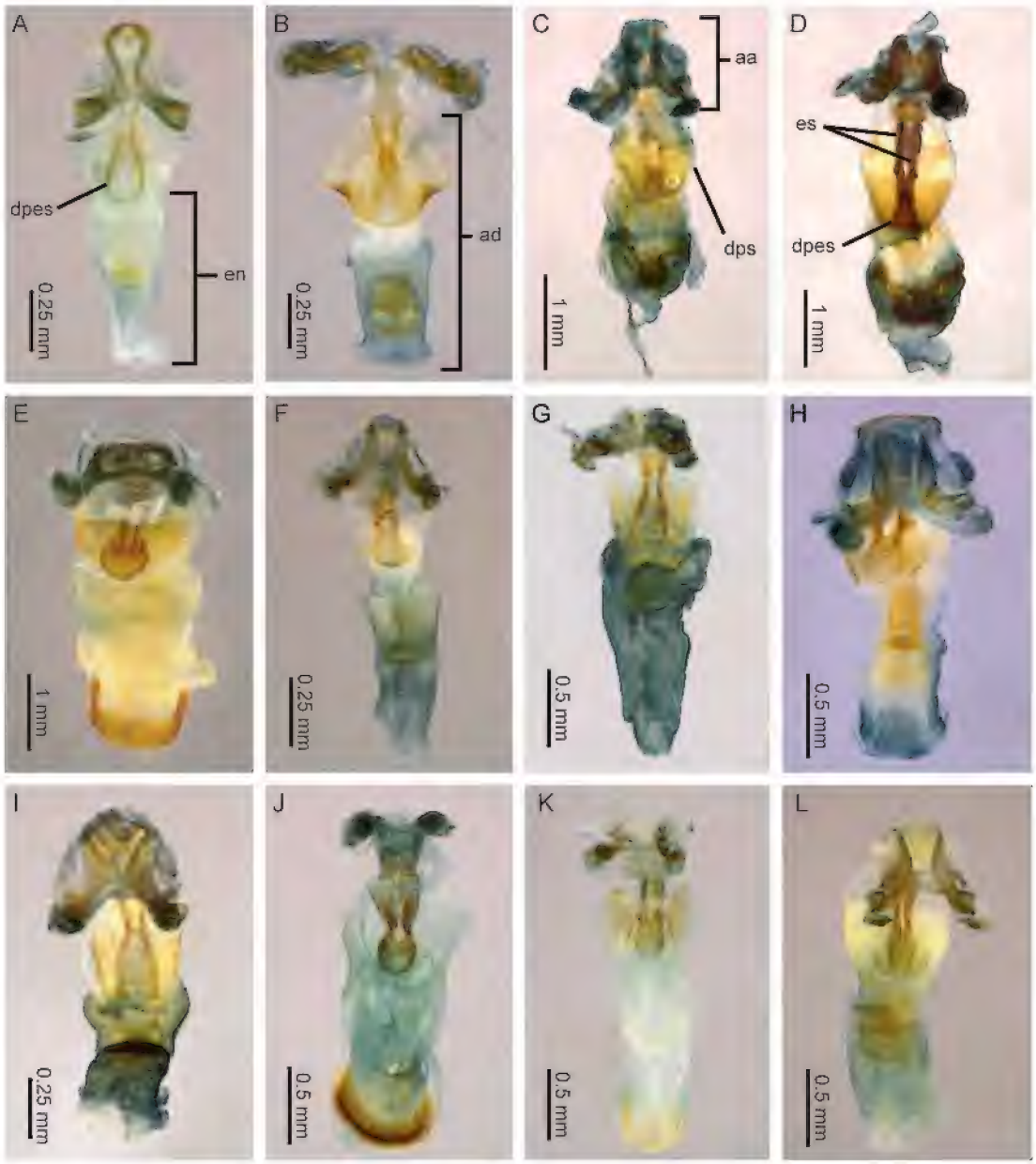

PLATE 21. Phallus morphology in dorsal view. **A.** *Gibbosella notoconica*, **B.** *Gibbosella vangocris*, **C.** *Glymmatophora carolae*, **D.** *Glymmatophora crassipes*, **E.** *Maraenaspis bidens*, **F.** *Marojejycoris brevifrons*, **G.** *Tanindrazanus notatus*, **H.** *Tanindrazanus varicolor*, **I.** *Toliarus trichrous*, **J.** *Toxopus fisheri*, **K.** *Toxopus toliara*, **L.** *Toxopus vazimba*.

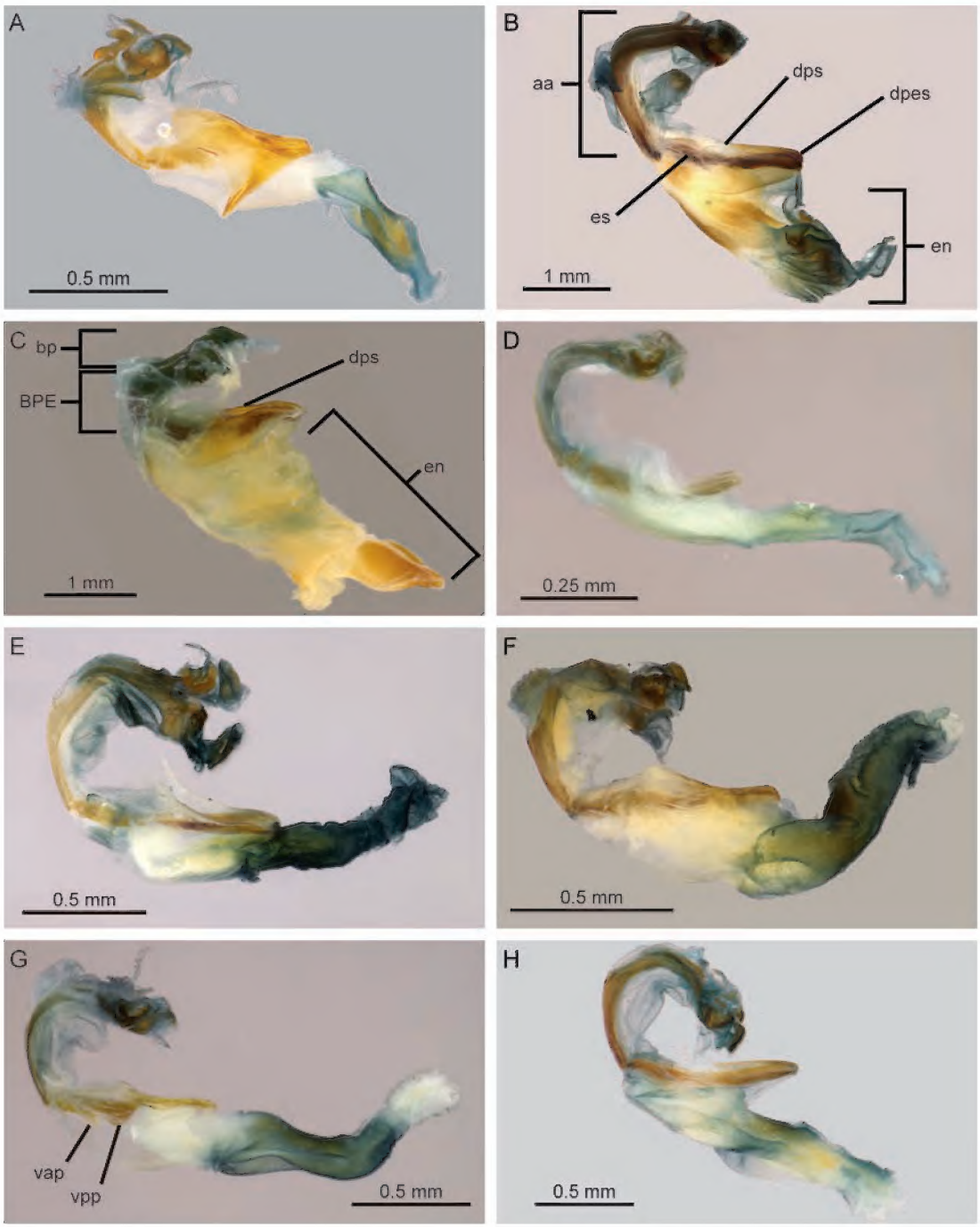

PLATE 22. Phallus morphology in lateral view. **A.** *Gibbosella vangocris*, **B.** *Glymmatophora crassipes*, **C.** *Maraenaspis bidens*, **D.** *Marojejycoris francais*, **E.** *Tanindrazanus nigripes*, **F.** *Toliarus trichrous*, **G.** *Toxopus ampitavananima*, **H.** *Toxopus basalis*.

PLATE 23. Female external (**A–E,** caudal view) and internal (**F.**, dorsal view) genitalic morphology. **A.** *Gibbosella brunalvus*, **B.** *Gibbosella planiscutum*, **C.** *Glymmatophora crassipes* var. 1, **D.** *Glymmatophora crassipes* var. 2, **E.** *Toxopus griswoldi*, **F.** *Glymmatophora crassipes* var. 2.

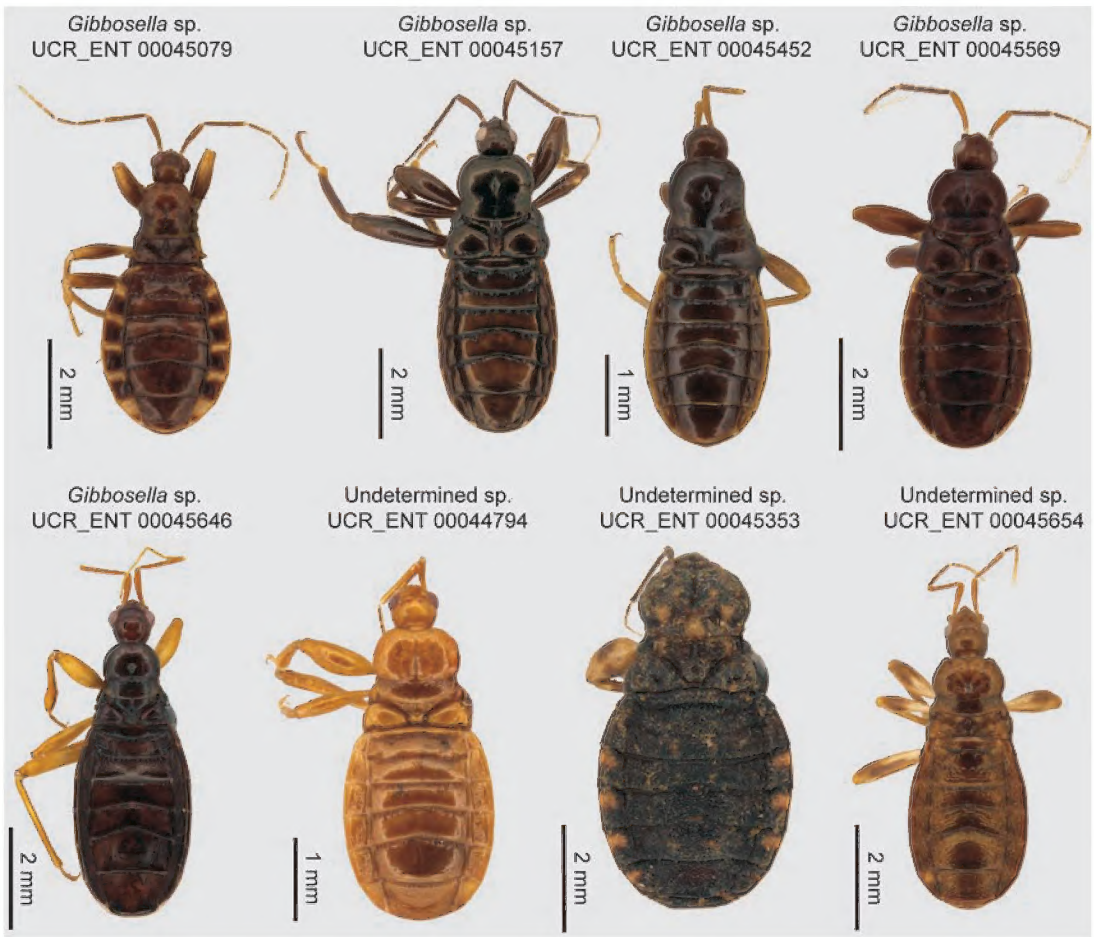

PLATE 24. Dorsal habitus of the eight females that cannot by associated with male-based species using molecular, morphological, and geographic data. Five females are assigned to *Gibbosella* based on morphological similarities, while three females cannot be assigned to any genera.

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On the cover: Male of *Tanindrazanus marojejy*, a newly described species from Madagascar. Illustration by Łukasz Junkiert.